THE GENE

基因传

众生之源

AN INTIMATE HISTORY

[美]悉达多·穆克吉 著

马向涛 译

中信出版集团

[illegible]

[[illegible]] [illegible]·[illegible] [illegible]
[illegible] [illegible]
[illegible]

[illegible]·[illegible]1906—1985[illegible]

[illegible]·[illegible]1906—1983[illegible]

[illegible]

——[illegible]·[illegible]William Bateson[illegible]

[illegible]

——[illegible]1Q84[illegible]

[illegible]
[illegible]

[illegible]

——[illegible]Menelaus[illegible]
[illegible]The Odyssey[illegible]

[illegible]

——[illegible]·[illegible]Philip Larkin[illegible]
[illegible]This Be The Verse[illegible]

2012[illegible]Moni[illegible]2004[illegible]40[illegible]

[illegible]

[illegible]

1946[illegible]Rajesh[illegible]22[illegible]

[illegible]10[illegible]1936[illegible]12[illegible]22[illegible]

[illegible]1946[illegible]20[illegible]40[illegible]

[illegible]

[illegible]

※※※

1975[illegible]Jagu[illegible]5[illegible]·[illegible]Jim Morrison[illegible]20[illegible]1975[illegible]·[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

[illegible]20[illegible]70[illegible]10[illegible]1985[illegible]1998[illegible]

※※※

[illegible]·[illegible]·[illegible]Saadat Hasan Manto[illegible]Toba Tek Singh[illegible]

[illegible]1946[illegible]55[illegible]1[illegible]1946[illegible]8[illegible]“[illegible]”[illegible]5 000[illegible]10[illegible]

[illegible]

[illegible]

※※※

2004

2012 20 48 10

[illegible]

[illegible]“[illegible]”[illegible]

※※※

[illegible]6[illegible]80[illegible]

[illegible]

※※※

2009[illegible]2012[illegible]

[illegible]59[illegible]

[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

※※※

“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]20[illegible]“[illegible]”“[illegible]”[illegible]“[illegible]”[illegible]19[illegible]20[illegible][1]

[illegible]——[illegible]·[illegible]Wallace Stevens[illegible]"[illegible]"[illegible]19[illegible]90[illegible]·[illegible]·[illegible]Hugo de Vries[illegible]"[illegible]……[illegible]"

[illegible]19[illegible]"[illegible]"[illegible]

[illegible]·[illegible]Thomas Morgan[illegible]"[illegible]"

[illegible][2][illegible]46[illegible]23[illegible]23[illegible]21 000[illegible]23 000[illegible]20[illegible]

[illegible]

※※※

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□4□□2012—2016□□□□□□□□□□□□□□□□□□□□□
□“□□□□”□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□”□□□□
□□□□□□□□□□□□□□□“□□”□□□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□·□□□
□George Orwell□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□“□□”□□□□□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□”□□□□□□□□□□
□□□□□□□□□

※※※

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□Mendel□□□□□□□□□1864□□□□□□□□□□□□□“□□□
□”□□□□□□□□□□□□□□□□□“□□”□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□20□□40□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□

□□□□□□□□“□□”□□□□□□□□□□□□□□□□□□□□DNA□□
□□□□□□□□□□□□□□□□□□□□□□□“□□”□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□·□□□James Watson□□□□·
□□□□Francis Crick□□□□·□□□□Maurice Wilkins□□□□□·□□□□
□Rosalind Franklin□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□
□□□□□□□□“DNA□□□□□”□□□□□□□□□□□□□□□□□□□□

20□□70□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□“□□”□“□□”□“□□□□”□□□□□□□□□□□□□□□□□□

[illegible]20[illegible]80[illegible]—[illegible]BRCA1[illegible]BRCA2[illegible]

[illegible]2001[illegible]“[illegible]”[illegible]

[illegible][3]

[illegible]

[illegible]

[1] [illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]James Gleick[illegible]Information:A History, a Theory, a Flood[illegible]20[illegible]90[illegible]·[illegible]John Wheeler[illegible]“[illegible]”[illegible]——[illegible]

[2] [illegible]

[3] GMOs

[illegible]

“[illegible]”
[illegible]1865–1935[illegible]

[illegible]

——[illegible]·[illegible]·[illegible]Herbert G. Wells[illegible]
[illegible]Mankind in the Making[illegible]

[illegible]

[illegible]

——[illegible]·[illegible]Oscar Wilde[illegible]
[illegible]The Importance of Being Earnest[illegible]

[illegible]
[illegible]

[illegible]

——[illegible]·[illegible]·[illegible]（G. K. Chesterton），
[illegible]（Eugenics and Other Evils）

[illegible]

——[illegible]·[illegible]（Job）12:8

[illegible]（Brno，[illegible]Brünn）[illegible]400[illegible]1783[illegible]（Emperor JosephⅡ）[illegible]14[illegible]

[illegible]

1843[illegible]10[illegible]1847[illegible]8[illegible]6[illegible]（Johann）[illegible]·[illegible]·[illegible]（Gregor Johann Mendel）[illegible]

[illegible]1845[illegible]
[illegible]1848[illegible]

[illegible]1848[illegible]“[illegible]”[illegible]

1850[illegible]“[illegible]”[illegible]7[illegible]20[illegible]8[illegible]16[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]8[illegible]

1851[illegible]

※※※

[illegible]90[illegible][1][illegible]4[illegible]

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□·□□□
□Christian Doppler□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□1842□□□39□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□1845□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□18□□□□□□□□□·□□Carl Linnaeus□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□

※※※

□□□□“□□□”□□□□□□□□□□□□□□□□□□Pythagoras□□□
□□□□□□□□□□530□□□□□□Croton□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□“□□□”□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

[illegible]“[illegible]”[illegible]

[illegible]458[illegible]Aeschylus[illegible]
[illegible]Eumenides[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]380[illegible]The Republic[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]“[illegible]”[illegible]Generation of Animals[illegible]

[illegible]“[illegible]……[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]principle of movement[illegible]“[illegible]”[illegible]“[illegible]……[illegible]”

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]Max Delbrück[illegible]DNA[illegible]

※※※

[illegible]code[illegible]caudex[illegible]

[illegible]“[illegible]”[illegible]16[illegible]20[illegible]Paracelsus[illegible]40[illegible]“[illegible]”[illegible]

[illegible]preformation[illegible]

[illegible]

[illegible]1694[illegible]·[illegible]Nicolaas Hartsoeker[illegible]

[illegible]1699[illegible]17[illegible]17[illegible]“[illegible]”[illegible]·[illegible]（Jan Swammerdam）[illegible]1669[illegible]“[illegible]”

※※※

[illegible]……[illegible]

[illegible]1768[illegible]·[illegible]（Caspar Wolff）[illegible]（vis essentialis corporis）[illegible]vis essentialis[illegible]

※※※

[illegible]18[illegible]“[illegible]”[illegible]19[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]19[illegible]

[1] [illegible]1[illegible]1.6[illegible]——[illegible]

[illegible]
“[illegible]”

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]……

——[illegible]·[illegible]（Robert Frost）[illegible]

[illegible]（Accidentally on Purpose）

1831[illegible]·[illegible]（Charles Darwin）[illegible]“[illegible]”（HMS Beagle）[illegible]“[illegible]”[illegible]22[illegible]“[illegible]”[illegible]·[illegible]（John Henslow）[illegible]

[illegible]1802[illegible]（Natural Theology）[illegible]·[illegible]（William Paley）[illegible]

[illegible]“[illegible]”[illegible]

[illegible]1830[illegible]A Preliminary Discourse on the Study of Natural Philosophy[illegible]·[illegible]Sir John Herschel[illegible]

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]……[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]18[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

※※※

1831[illegible]8[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[1][illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

1831[illegible]12[illegible]27[illegible]“[illegible]”[illegible]73[illegible]Tenerife[illegible]1[illegible]“[illegible]”[illegible]Cape Verde[illegible]Milton[illegible]Paradise Lost[illegible]·[illegible]Charles Lyell[illegible]1830[illegible]1833[illegible]Principles of Geology[illegible]

[illegible]1832[illegible]2[illegible]“[illegible]”[illegible]

※※※

[illegible]“[illegible]”[illegible]Montevideo[illegible]Bahia Blanca[illegible]Port Desire[illegible]“[illegible]”[illegible]1832[illegible]9[illegible]Punta Alta[illegible]

[illegible]11[illegible]18[illegible]“[illegible]”[illegible]

“[illegible]”[illegible]1835[illegible]Galápagos[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]18[illegible]“[illegible]”[illegible]5[illegible]

10[illegible]20[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]5[illegible]·[illegible]

[illegible]John Gould[illegible]
[illegible]·[illegible]Richard Owen[illegible]

[illegible]1836[illegible]

[illegible]“[illegible]”[illegible]

[illegible]1837[illegible]13[illegible]

[illegible]
1796[illegible]—[illegible]·[illegible]Pierre-Simon Laplace[illegible]“[illegible]”[illegible]

※※※

1837[illegible]7[illegible]
B[illegible]“[illegible]”[illegible]

13 “ ” “ ”

13 1838 C

8 000

1838 10 · Thomas Malthus

※※※

· 1798 An Essay on the Principle of Population

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]Sisyphus[illegible]

[illegible]“[illegible]”[2]

[illegible][3][illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]

[illegible]

※※※

1839[illegible]“[illegible]”[illegible]1844[illegible]255[illegible]

1855[illegible]15[illegible]·[illegible]·[illegible]Alfred Russel Wallace[illegible]Annals and Magazine of Natural History[illegible]“[illegible]”[illegible]

[illegible]

1854[illegible]1857[illegible]“[illegible]……[illegible]……[illegible]”[illegible]

1858[illegible]6[illegible]1858[illegible]7[illegible]1[illegible]5[illegible]

※※※

[illegible]1859[illegible]·[illegible]John Murray[illegible]“[illegible]”1859[illegible]11[illegible]24[illegible]·[illegible]On the Origin of Species by Means of Natural Selection[illegible]15[illegible]1 250[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”

[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”

[1] [illegible]gentleman scientist[illegible]——[illegible]

[2] [illegible]

[3] [illegible]

[illegible]
“[illegible]”

> [illegible]……[illegible]“[illegible]”[illegible]
>
> ——[illegible]·[illegible]·[illegible]
> （Alexander Wilford Hall），1880

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]18[illegible]—[illegible]·[illegible]（Jean-Baptiste Lamarck）[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]gemmules[illegible]“[illegible]”[illegible]

[illegible]

[illegible]“[illegible]”[illegible]1867[illegible]10[illegible]The Variation of Animals and Plants Under Domestication[illegible]“[illegible]

[illegible]”[illegible]·[illegible]Asa Gray[illegible]“[illegible]
[illegible]”

※※※

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]
[illegible]North British Review[illegible]
[illegible]

[illegible]·[illegible]Fleeming Jenkin[illegible]
[illegible]

[illegible]“[illegible]”[illegible]
[illegible]“[illegible]”[illegible]
[illegible]“[illegible]
[illegible]……[illegible]”

[illegible]“[illegible]”[illegible]
[illegible]1/2[illegible]1/4[illegible]1/8[illegible]
[illegible]1/16[illegible]
[illegible]“[illegible]”[illegible]“[illegible]”[illegible]
[illegible]

[illegible]
[illegible]“[illegible]”[illegible]
[illegible]Prospero[illegible]
[illegible]The Tempest[illegible]
[illegible]

[illegible][1]

※※※

[illegible]“[illegible]·[illegible]”[illegible]

[illegible]

[illegible]1866[illegible]“[illegible]”[illegible]19[illegible]70[illegible]50[illegible]51[illegible]53[illegible]54[illegible]52[illegible]

[illegible]·[illegible]·[illegible]

[1] [illegible]“[illegible]”[illegible]

[illegible]
[illegible]

[illegible]

——[illegible]
[illegible]1865[illegible]

[illegible]……[illegible]

——[illegible]·[illegible]·[illegible]

1856[illegible]·[illegible]1850[illegible]1853[illegible]

[illegible]

※※※

[illegible]3[illegible]34[illegible][1]“[illegible]”[illegible]

[illegible]

[illegible]

1.[illegible]

2.[illegible]

3.[illegible]

4.[illegible]

5.[illegible]

6.[illegible]

7.[illegible]

[illegible]“[illegible]”[illegible]alleles[illegible]“[illegible]”[illegible]allos[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

[illegible]19[illegible]50[illegible]

[illegible]

※※※

1857[illegible]“[illegible]”[illegible]8[illegible]20[illegible][2]×100[illegible]

[illegible]·[illegible]Ludwig Wittgenstein[illegible]“[illegible]”[illegible]18[illegible]

[illegible]“[illegible]”[illegible]

※※※

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]dominant[illegible]recessive[illegible]

[illegible]19[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]20[illegible]

[illegible][3][illegible]

※※※

1857[illegible]1864[illegible]“[illegible]”[illegible]2.8[illegible]4[illegible]40[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]tenderness[illegible]tending[illegible]tension[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

[illegible][4]

※※※

1865[illegible]2[illegible]8[illegible]3[illegible]8[illegible]7[illegible]40[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]44[illegible]10[illegible]40[illegible]

[illegible]“[illegible]”[illegible]1866[illegible]1900[illegible]4[illegible]1890[illegible]1900[illegible]

※※※

1866[illegible]·[illegible]·[illegible]Carl von Nägeli[illegible]
[illegible]“[illegible]……[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]1867[illegible]1871[illegible]

1873[illegible]11[illegible]“[illegible]……[illegible]”[illegible]

[illegible]19[illegible]80[illegible]1884[illegible]1[illegible]6[illegible]“[illegible]……[illegible]”

[1] [illegible]·[illegible]Cyril Knapp[illegible]

[2] [illegible]1[illegible]≈ 0.3[illegible]——[illegible]

[3] [illegible]

[4] [illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]
“[illegible]”

[illegible]

——[illegible]—[illegible]·[illegible]

[illegible]

——[illegible]·[illegible]

[illegible]

——[illegible]·[illegible]·[illegible]

1878[illegible]30[illegible]·[illegible]·[illegible]“[illegible]”[illegible]·[illegible]·[illegible]·[illegible]·[illegible]·[illegible]·[illegible]·[illegible]

[illegible]19[illegible]Fermat[illegible]“[illegible]”[illegible]“[illegible]”[illegible]1868[illegible]“[illegible]”

[illegible]10[illegible]“[illegible]”[illegible]1882[illegible]·[illegible]4[illegible]

· “ ”

· August Weismann 1883 901 “ ” “ ”

“ ”

※※※

· · · ·

· 1865 ·

19 80 · 1897 · Hereditary Monstrosities

[illegible]·[illegible]“[illegible]”[illegible]

※※※

1900[illegible]·[illegible]·[illegible]“[illegible]1865[illegible]……[illegible]”

[illegible]3[illegible]·[illegible]·[illegible]“[illegible]”[illegible]·[illegible]30[illegible]·[illegible]·[illegible]1900[illegible]3[illegible]·[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”

※※※

[illegible]·[illegible]·[illegible]·[illegible]Carl Correns[illegible]“[illegible]”[illegible]

[illegible]400[illegible]

[illegible]1856[illegible]·[illegible]·[illegible]—[illegible]Erich von Tschermak-Seysenegg[illegible]“[illegible]”[illegible]·[illegible]·[illegible]·[illegible]

[illegible]·[illegible]“[illegible]”

[illegible]1900[illegible]3[illegible]3[illegible]40[illegible]·[illegible]1900[illegible]·[illegible]·[illegible]·[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]

[illegible]·[illegible]·[illegible]

[illegible]·[illegible]Oenothera lamarckiana[illegible]·[illegible]5[illegible]·[illegible]800[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]mutants[illegible]“[illegible]”[illegible][1]

[illegible]·[illegible]·[illegible]

※※※

[illegible]·[illegible]20[illegible]·[illegible][2]1900[illegible]5[illegible]·[illegible]

[illegible]“[illegible]”[illegible]8[illegible]·[illegible]Francis Galton[illegible]“[illegible]Mendl[illegible]”

[illegible]·[illegible]·[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]Pangenetics[illegible]·[illegible]“[illegible]”[illegible]Pangene[illegible]“[illegible]”[illegible]“[illegible]”

1905[illegible]Genetics[illegible]“[illegible]”[illegible]genno[illegible]

[illegible]1905[illegible]“[illegible]……[illegible]……[illegible]‘[illegible]’[illegible]……[illegible]”

[illegible]“[illegible]”[illegible]

“[illegible]”[illegible]“[illegible]”[illegible]

[1] [illegible]·[illegible]“[illegible]”[illegible]

[2] [illegible]“[illegible]”[illegible]

[illegible]
[illegible]

[illegible]

——[illegible]·[illegible]Herbert Walter[illegible]
[illegible]Genetics[illegible]

[illegible]……[illegible]“……[illegible]……[illegible]”[illegible]……[illegible]“[illegible]”[illegible]

——[illegible]·[illegible]·[illegible]
[illegible]

1883[illegible]·[illegible]Inquiries into Human Faculty and Its Development[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]Eugenics[illegible]“[illegible]‘[illegible]’[illegible]viriculture[illegible]……”[illegible]eu[illegible]“[illegible]”[illegible]genesis[illegible]“[illegible]”[illegible]“[illegible]……[illegible]”

※※※

[illegible]1822[illegible]·[illegible]13[illegible]

[illegible]·[illegible]·[illegible]2[illegible]5[illegible]8[illegible]1843[illegible]

1844[illegible]19[illegible]30[illegible]“[illegible]”[illegible]“[illegible]”

1859[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

19[illegible]60[illegible]“[illegible]”[illegible]

[illegible]19[illegible]30[illegible]40[illegible]·[illegible]Adolphe Quetelet[illegible]“[illegible]”[illegible]5 738[illegible]

[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]……[illegible]”

[illegible]1453[illegible]1853[illegible]605[illegible]102[illegible]1/12[illegible]1/3 000[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]nature versus nurture[illegible]“[illegible]”[illegible]

[illegible]Hereditary Genius[illegible]“[illegible]”[illegible]

※※※

[illegible]19[illegible]80[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible][1][illegible]

[illegible]19[illegible]80[illegible]1/4[illegible]1/8[illegible]1/2+1/4+1/8……[illegible]1[illegible]“[illegible]”[illegible]

[illegible]1897[illegible]·[illegible]（Sir Everett Millais[illegible]1896[illegible]Basset Hound Club Rules[illegible]

[illegible]1901[illegible]1905[illegible]·[illegible]1/2[illegible]1/4[illegible]·[illegible]

[illegible]·[illegible]Walter Weldon[illegible]·[illegible]Arthur Darbishire[illegible]·[illegible]Karl Pearson[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]Biometrika,[illegible]

1902[illegible]

[illegible]

1905[illegible]“[illegible]”[illegible]46[illegible]“[illegible]”

※※※

[illegible]“[illegible]”[illegible]1900[illegible]1910[illegible]“[illegible]”[illegible]2000[illegible]

[illegible]“[illegible]……[illegible]”

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]1808[illegible]·[illegible]John Dalton[illegible]1909[illegible]·[illegible]Wilhelm Johannsen[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]pangene[illegible]“[illegible]”[illegible]gene[illegible]“gen”[illegible]

[illegible]“[illegible]

[illegible]‘[illegible]’[illegible]‘[illegible]’[illegible]……[illegible]‘[illegible]’[illegible]”[illegible]“‘[illegible]’[illegible]……[illegible]……[illegible]”

[illegible]“[illegible]”[illegible]

1914[illegible]“[illegible]……[illegible]”

※※※

[illegible]·[illegible]“[illegible]”[illegible]

[illegible]·[illegible]Daniel Kevles[illegible]“[illegible]”[illegible]“[illegible]”[illegible]1869[illegible]30[illegible]·[illegible]·[illegible]“[illegible]……[illegible]”

1904[illegible][2][illegible]·[illegible]George Bernard

Shaw[illegible]·[illegible]·[illegible]·[illegible]—[illegible]Alice Drysdale-Vickery[illegible]Lady Welby[illegible]·[illegible]Benjamin Kidd[illegible]·[illegible]Henry Maudsley[illegible]

[illegible]10[illegible]“[illegible]”[illegible]“[illegible]”

[illegible]“[illegible]……[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]·[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]·[illegible]Herbert Spencer[illegible]

[illegible]·[illegible]·[illegible]1895[illegible]The Time Machine[illegible]“[illegible]”[illegible]“[illegible]”

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]40[illegible]”[illegible]17[illegible]18[illegible]“[illegible]”[illegible]1867[illegible]1906[illegible]29[illegible]“[illegible]”[illegible]

1860[illegible]·[illegible]George Eliot[illegible]The Mill on the Floss[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]Thomas Hobbes[illegible]“[illegible]”[illegible]“[illegible]”[illegible]kakogenics[illegible]“[illegible]”[illegible]

[illegible]1911[illegible]·[illegible]Havelock Ellis[illegible]“[illegible]……[illegible]……[illegible]”

※※※

□“□”□
□“□”□1909□
□Eugenics Review□1911□
□Kantsay where□
□“□”□

1912□7□24□Cecil Hotel□
□800□
□12□·□Winston Churchill□
□Lord Balfour□·□·□Alexander Graham Bell□·□Charles Eliot□·□William Osler□·□·□Leonard Darwin□·□

□“□”□·□Alfred Ploetz□
□·□Charles Davenport□1910□1911□
□Heredity in Relation to Eugenics□
□“□”□

□1912□·□·□Bleecker Van Wagenen□·□
□“□”□“□”□

[illegible]·[illegible]“[illegible]1/10[illegible]……[illegible]……[illegible]8[illegible]……[illegible]……[illegible]”

1912[illegible]“[illegible]”

[1] [illegible]“[illegible]”[illegible]

[2] [illegible]Bloomsbury[illegible]20[illegible]——[illegible]

[illegible]
“[illegible]”

[illegible]

——[illegible]·[illegible]（Theodosius Dobzhansky），[illegible]（Heredity and the Nature of Man）

[illegible]

——[illegible]

1920[illegible]·[illegible]·[illegible]（Emmett Adaline Buck）[illegible]·[illegible]（Frank Buck）[illegible]·[illegible]（Carrie Buck）[illegible]

[illegible]3[illegible]1920[illegible]4[illegible]1[illegible]“[illegible]”[illegible]

[illegible]1924[illegible]“[illegible]”[illegible]“[illegible]35[illegible]”[illegible]

[illegible]“[illegible]”[illegible]200[illegible]1[illegible]4 047[illegible]1[illegible]

[illegible]——[illegible]

[illegible]“[illegible]”

[illegible]

※※※

1920[illegible]·[illegible]
1918[illegible]12[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]1924[illegible]1[illegible]23[illegible]4[illegible]

1924[illegible]3[illegible]28[illegible]·[illegible]Vivian Elaine[illegible]1924[illegible]6[illegible]4[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

1924[illegible]8[illegible]·[illegible]·[illegible]

[illegible]·[illegible]Keysville[illegible]1910[illegible]·[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]1924[illegible]3[illegible]29[illegible]“[illegible]”[illegible]9[illegible]10[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]1924[illegible]10[illegible]“[illegible]”[illegible]

1925[illegible]11[illegible]17[illegible]·[illegible]“[illegible]……[illegible]”[illegible]“[illegible]”[illegible]8[illegible]

[illegible]

“[illegible]”

“[illegible]”[illegible]

[illegible]“[illegible]……”

“[illegible]”

“[illegible]”

[illegible]

□□□□□□□□□□□□□□□□□□5□□□□□□□□□□□□□□□□□□□□□□□□·□□□□
□□□□□□□□□□□□“□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□”

□□□
□□□1927□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□·□□
□John Bell□□□□□□□□□□□□□□□□□□

※※※

1927□□□□□□□□□□□□□□□□“□□□□□□”□□□□□□□□□□□□□□□□□□□□□
□□
1890□□1924□□□□□□1 000□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□
□1927□□□□□□□□□□□□□□□□40%□□□□19□□80□□□□□□□□□□□□□
□□□□□□□□□□□20□□20□□□□□□□□□□“□□□□”□□□□□□□□□□[1]□□□□
□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□□”□□□□□□□
□□“□□”□□□□□□□□“□□”□□□□“□□”□□□□□“□□”□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□·□□□□□□“□□□□□
□□□□□□□□□□□□□□”□□□□□□□□□□□□□□□□□□“□□□□□□”□□□□□□□
□□□□□□□□□□□□□·□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□□□
□”□□□□□□□□□□□□□□□□□□1926□□□□□□□□□□□□□“□□□□□□□□□
□□□□□□□□□□□”□□□□□□□□□□□□□□

□□“□□□□”□“□□□□”□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
20□□□□□□□□□□□□□□·□□·□□□Edgar Rice Burroughs□□□□□
□□□Tarzan of the Apes□□□□□□□□□□□□□□□□□□□□□□□19□□□□□
□□□
□□□□□□□□□□□□□□□□□□□□—□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□“□□□□□□□□□□□□□□□□□□□□□□□□□□□□”□□□□□□□□
□□□
□□□□□□□□□□□□□

[illegible]“[illegible]”[illegible]1927[illegible]5[illegible]2[illegible]·[illegible]21[illegible]8[illegible]1[illegible]·[illegible]·[illegible]Oliver Wendell Holmes Jr.[illegible]“[illegible]”

[illegible]“[illegible]”

※※※

1927[illegible]10[illegible]19[illegible]·[illegible]9[illegible]10[illegible]·[illegible]

[illegible]“[illegible]”[illegible]·[illegible]

※※※

[illegible]·[illegible]62[illegible]60[illegible]1927[illegible]“[illegible]”[illegible]1927[illegible]“[illegible]”[illegible]

[illegible]20[illegible]20[illegible]“[illegible]”[illegible]1[illegible]2[illegible]“[illegible]”[illegible]

[illegible]“[illegible]50%[illegible]”[illegible]“2[illegible]10[illegible]”[illegible]“[illegible]”[illegible]

[illegible]·[illegible]Harry Haiselden[illegible]1927[illegible]“[illegible]”[illegible]Are You Fit to Marry?[illegible]The Black Stork[illegible]“[illegible]”[illegible]20[illegible]20[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]1936[illegible]“[illegible]”[illegible]10[illegible]“[illegible]”[illegible]

[1] [illegible]“[illegible]”[illegible]19[illegible]60[illegible]20[illegible]20[illegible]“[illegible]”[illegible]

[illegible]

“[illegible]” [illegible]1930–1970[illegible]

[illegible]

“[illegible]

[illegible]

[illegible]”

——[illegible]·[illegible]
[illegible]On the Road Home[illegible]

[illegible]
“[illegible]”

[illegible]

——[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

——[illegible]·[illegible]Thomas Hardy[illegible]
[illegible]Heredity[illegible]

[illegible]Sealdah[illegible]1946[illegible]5[illegible]4[illegible]Barisal[illegible]·[illegible]Prafulla Chandra[illegible]

[illegible]

“[illegible]”[illegible]·[illegible]Bibhuti Mukhopadhyay[illegible]

[illegible]

[illegible]“[illegible]”[illegible]“chh”[illegible]“ss”[illegible]

“[illegible]”[illegible]“[illegible]”

[illegible]

[illegible]“[illegible]”[illegible]

[illegible]12[illegible]

“[illegible]”[illegible]“[illegible]”

[illegible]

[illegible]

[illegible]

“[illegible]”[illegible]

“[illegible]”[illegible]

[illegible]

“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

“[illegible]”[illegible]

[illegible]

※※※

20[illegible]20[illegible]

[illegible]1907[illegible]·[illegible]·[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”

[illegible]·[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]Arthur Kornberg[illegible]“[illegible]

[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”

[illegible]19[illegible]90[illegible]·[illegible]Theodor Boveri[illegible]·[illegible]·[illegible]—[illegible]Wilhelm von Waldeyer-Hartz[illegible]

[illegible]·[illegible]Walter Sutton[illegible]1902[illegible]·[illegible]Nettie Stevens[illegible]1905[illegible]“[illegible]”[illegible]Y[illegible]Y[illegible]Y[illegible]DNA[illegible]X[illegible]

※※※

[illegible]·[illegible]“[illegible]”[illegible]

[illegible]1905[illegible][1][illegible]“[illegible]”[illegible]

[illegible]20[illegible]·[illegible]·[illegible]·[illegible]

[illegible]

[illegible]·[illegible]Alfred Sturtevant[illegible]·[illegible]Calvin Bridges[illegible]·[illegible]Hermann Muller[illegible]

※※※

[illegible]“[illegible]”[illegible]

[illegible]1910[illegible]1912[illegible]“[illegible]”[illegible]Y[illegible]

[illegible]“[illegible]”[illegible]

※※※

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”

※※※

[illegible]B[illegible]Bl[illegible]

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

1911[illegible]20[illegible]A[illegible]B[illegible]A[illegible]C[illegible]

A. B..........C.

[illegible]N[illegible]SB[illegible]N[illegible]SB[illegible]6[illegible]

[illegible]20[illegible]90[illegible]

[illegible]12[illegible]

※※※

[illegible]1905[illegible]1925[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]1865[illegible]1915[illegible]50[illegible]

※※※

[illegible]1917[illegible]3[illegible]

[illegible]“[illegible]”[illegible]1917[illegible]3[illegible]B[illegible]

[illegible]hemophilia[illegible]“[illegible]”[illegible]haimo[illegible]“[illegible]”[illegible]philia[illegible]

[illegible]“[illegible]”[illegible]Leopold[illegible]30[illegible]

[illegible]1904[illegible]Alexei[illegible]

[illegible]·[illegible]Grigory Rasputin[illegible]

[illegible]

1916[illegible]12[illegible]30[illegible]1918[illegible]7[illegible]17[illegible]14[illegible]

2007[illegible]13[illegible]B[illegible]20[illegible]

[1] [illegible]

[illegible]
[illegible]

[illegible]

——[illegible]·[illegible]·[illegible]William Butler Yeats[illegible]
[illegible]1916[illegible]Easter, 1916[illegible]

[illegible]“[illegible]”[illegible]19[illegible]

[illegible]“[illegible]”[illegible]

[illegible]

※※※

[illegible]60[illegible]

[illegible]

[illegible]1920[illegible]1940[illegible]20[illegible]

※※※

[illegible]·[illegible]Ronald Fisher[illegible]1909[illegible]1914[illegible]“[illegible]”[illegible]

[illegible]1910[illegible]19[illegible]“[illegible]”[illegible]

[illegible]5[illegible]7[illegible]

[illegible]5[illegible]7[illegible]3[illegible]6[illegible]3[illegible]3[illegible]6[illegible]27[illegible]

[illegible]5[illegible]7[illegible]7[illegible]“[illegible]”[illegible]

1918[illegible]The Correlation between Relatives on the Supposition ofMendelian Inheritance[illegible]3[illegible]5[illegible]“[illegible]”[illegible]

※※※

[illegible]

[illegible]·[illegible]·[illegible]·[illegible]

[illegible]·[illegible]20[illegible]30[illegible]·[illegible]Mount San Jacinto[illegible]Sierra Nevada[illegible]

[illegible]Drosophila pseudoobscura[illegible]“[illegible]”[illegible]A[illegible]B[illegible]C[illegible]A—B—C[illegible]C—B—A[illegible]

[illegible]1943[illegible]9[illegible]“ABC”[illegible]“CBA”[illegible]1:1[illegible]4[illegible]ABC[illegible]CBA[illegible]

[illegible]“[illegible]”[illegible]

※※※

[illegible]

[illegible]

[illegible]

[illegible]

□□□+□□=□□

□□
□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

□□□□□BRCA1□□□□□□□□□□□□□□□□□□□□□□□□□□BRCA1□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□”□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□”□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□BRCA1□□□□□□□□□□□30□□□□□□□□□□□□□□□□□□
□□
□□□□□□□□□□□

□□
□□□□□□□BRCA1□□□□□□□□□□□□□□□□□□□□□□

□□□□□□□□□□□□□□□□□□□□

□□□+□□+□□□+□□=□□

□□
□□
□□
□□
□□
□□
□□
□□
□□

□□
□□
□□
□□□□□□□□□□□□□□□□□□□□□□□□

※※※

[illegible]“[illegible]”[illegible]“[illegible]”[illegible][1][illegible]

[illegible]

[illegible]

[illegible]20[illegible]30[illegible]1917[illegible]“[illegible]”[illegible]

※※※

[illegible]20[illegible]40[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]ABC[illegible]CBA[illegible]“[illegible]”[illegible]“[illegible]—[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]“[illegible]”[illegible]Alfred North Whitehead[illegible]

[1] [illegible]20[illegible]40[illegible]50[illegible]

[illegible]

> [illegible]“[illegible]”[illegible]
>
> ——[illegible]·[illegible]

> [illegible]……[illegible]……[illegible]
>
> ——[illegible]·[illegible]Trofim Lysenko[illegible]

[illegible][1][illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

※※※

[illegible]·[illegible]Frederick Griffith[illegible]20[illegible]20[illegible]Streptococcus pneumoniae[illegible]pneumococcus[illegible]1918[illegible]2 000[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

[illegible]20[illegible]20[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]……[illegible]”[illegible]·[illegible]“[illegible]”[illegible]Brighton[illegible]

1928[illegible]1[illegible]“[illegible]”[illegible]Journal of Hygiene[illegible]20[illegible]30[illegible]

※※※

[illegible]·[illegible]“[illegible]”[illegible]1920[illegible]·[illegible]·[illegible]30[illegible]

[illegible]X[illegible]1926[illegible]X[illegible]

[illegible]“[illegible]”[illegible]30[illegible]50[illegible]

[illegible]·[illegible]

[illegible]X[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]20[illegible]20[illegible]“[illegible]”[illegible]20[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]·[illegible]

※※※

[illegible]·[illegible]

[illegible]·[illegible]Theodore Dreiser[illegible]The Spark[illegible]Iskra[illegible]“[illegible]”“[illegible]”“[illegible]”[illegible]

[illegible]

[illegible]20[illegible]30[illegible]·[illegible]“[illegible]”[illegible]

1932[illegible]1932[illegible]·[illegible]Kaiser Wilhelm Institute[illegible]

[1] [illegible]·[illegible]Sewall Wright[illegible]J. B. S. Haldane[illegible]

[illegible]

[illegible]

[illegible]

——[illegible]T4[illegible]

[illegible]……[illegible]

——[illegible]·[illegible]Josef Mengele[illegible]

[illegible]

[illegible]60[illegible]5[illegible]

——[illegible]

[illegible]·[illegible]Fritz Lenz[illegible]“[illegible]”[illegible][1]

1933[illegible]·[illegible]·[illegible]“[illegible]”[illegible]1[illegible]·[illegible]3[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]Alfred Ploetz[illegible]1895[illegible]1912[illegible]“[illegible]”[illegible][2]1914[illegible]·[illegible]Heinrich Poll[illegible]“[illegible]”

[illegible]“[illegible]”[illegible]20[illegible]20[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]

※※※

[illegible]“[illegible]”[illegible]Beer Hall Putsch[illegible]20[illegible]20[illegible]20[illegible]30[illegible]1933[illegible]5[illegible]Prevention of Genetically Diseased Offspring[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]……[illegible]”[illegible]

[illegible]Das Erbe[illegible]Erbkrank[illegible]“[illegible]”[illegible]“[illegible]”[illegible]1935[illegible]1936[illegible]“[illegible]”[illegible]Olympia[illegible]·[illegible]Leni Riefenstahl[illegible]“[illegible]”[illegible]

[illegible]1933[illegible]11[illegible]“[illegible]”[illegible]1935[illegible]10[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]1934[illegible]5 000[illegible]200[illegible]·[illegible]Lothrop Stoddard[illegible]·[illegible]20[illegible]30[illegible]“[illegible]”[illegible]

※※※

[illegible]1935[illegible]20[illegible]30[illegible]1939[illegible]·[illegible]Richard Kretschmar[illegible]·[illegible]Lina Kretschmar[illegible]Gerhard[illegible]11[illegible]

[illegible]·[illegible]·[illegible]Karl Brandt[illegible]“[illegible]”[illegible]“[illegible]”[illegible]lebensunwertes Leben[illegible]

[illegible]3[illegible]“[illegible]”[illegible]1939[illegible]9[illegible]“[illegible]”[illegible]1939[illegible]10[illegible]4[illegible]No.4 Tiergartenstrasse[illegible]“T4[illegible]”[illegible]Aktion T4[illegible]

[illegible]Hadamar[illegible]Brandenburg State Welfare

Institute[illegible]T4[illegible]“[illegible]”[illegible]

[illegible]1939[illegible]·[illegible]Mary Rau[illegible]“[illegible]”[illegible]1941[illegible]T4[illegible]25[illegible]1933[illegible]1943[illegible]40[illegible]

※※※

[illegible]·[illegible]Hannah Arendt[illegible]“[illegible]”[illegible]banality of evil[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]·[illegible]Otmar von Verschuer[illegible]·[illegible]The Racial Biology of Jews[illegible]1849[illegible]1907[illegible]7[illegible]“[illegible]”1936[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]600[illegible]20[illegible]“[illegible]”[illegible]“[illegible]”[illegible]genocide[illegible]“gene”[illegible]

[illegible]“[illegible]”[illegible]·[illegible]Martin Neimöller[illegible]

[illegible]——

[illegible]

[illegible]——

[illegible]

[illegible]——

[illegible]

[illegible]——[illegible]

※※※

20[illegible]30[illegible]20[illegible]30[illegible]

[illegible]“[illegible]”[illegible]1928[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

1940[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]Nicolai Vavilov[illegible]1940[illegible]8[illegible]“[illegible]”[illegible]“[illegible]”[illegible]1943[illegible]1[illegible]“[illegible]”[illegible]“[illegible]”[illegible]20[illegible]

※※※

[illegible]

[illegible]“[illegible]”[illegible]·[illegible]19[illegible]90[illegible]“[illegible]”[illegible]

[illegible]

[illegible]·[illegible]·[illegible]Hermann Werner Siemens[illegible]1924[illegible][3]

[illegible]concordance[illegible]“[illegible]”[illegible]100%[illegible]1[illegible]50%[illegible]0.5[illegible]

[illegible]·[illegible]1943[illegible]1945[illegible]1 000[illegible][4][illegible]·[illegible]·[illegible]“[illegible]”[illegible]Zwillinge heraus[illegible]“[illegible]”[illegible]Zwillinge heraustreten[illegible]

[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

※※※

[illegible]20[illegible]30[illegible]20[illegible]20[illegible]1901[illegible]1932[illegible]100[illegible]33[illegible]18[illegible]6[illegible]1933[illegible]·[illegible]·[illegible]·[illegible]Otto Hahn[illegible]·[illegible]Hans Krebs[illegible]

[illegible]1933[illegible]4[illegible]1933[illegible]·[illegible]Ernest Chain[illegible]·[illegible]Wilhelm Feldberg[illegible]·[illegible]Max Perutz[illegible]1937[illegible]·[illegible]Erwin Schrödinger[illegible]·[illegible]·[illegible]“[illegible]”[illegible]·[illegible]1945[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]X[illegible]

[illegible]“[illegible]”[illegible]1943[illegible]·[illegible]What Is Life?[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]DNA[illegible]

[1] [illegible]·[illegible]Rudolf Hess[illegible]

[2] [illegible]20[illegible]30[illegible]

[3] 20[illegible]20[illegible]·[illegible]Curtis Merriman[illegible]·[illegible]Walter Jablonski[illegible]

[4] [illegible]Mengele:The Complete Story[illegible]·[illegible]Gerald L. Posner[illegible]·[illegible]John Ware[illegible]

[illegible]
“[illegible]”

[illegible]

——[illegible]·[illegible]（Robert Heinlein）

1933[illegible]·[illegible]Oswald Avery[illegible]55[illegible]·[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]20[illegible]40[illegible]

[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]1869[illegible]4[illegible]·[illegible]Friedrich Miescher[illegible]nuclein[illegible]nucleic acids[illegible]

[illegible]20[illegible]20[illegible]DNA[illegible]RNA[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]A[illegible]G[illegible]C[illegible]T[illegible]RNA[illegible]U[illegible]A[illegible]C[illegible]G[illegible]U[illegible][1][illegible]DNA[illegible]RNA[illegible]

[illegible]·[illegible]Phoebus Levene[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]AGCT—AGCT—AGCT—AGCT[illegible]“[illegible]”[illegible]

[illegible]DNA[illegible]DNA[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]

※※※

1940 “”

·Colin MacLeod ·Maclyn McCarty 8 “” 1940 10

65

“ …… ” “ ” RNA DNA

DNA DNA “” DNA “ ” 1943 “ …… ”

“ ” “ ……

[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

1944[illegible]·[illegible]DNA[illegible]1944[illegible]50[illegible]45[illegible]1945[illegible]90[illegible]7.4[illegible]2.1[illegible]1.5[illegible]

1945[illegible]6[illegible]1945[illegible]1[illegible]27[illegible]7 000[illegible]

※※※

[illegible]1939[illegible]1945[illegible]

[1] DNA[illegible]RNA[illegible]“[illegible]”[illegible]RNA[illegible]RNA[illegible]DNA[illegible]DNA[illegible]

[illegible]
DNA[illegible]

[illegible]

——[illegible]·[illegible]

[illegible]

——[illegible]·[illegible]

[illegible]

——[illegible]·[illegible]Benoit Mandelbrot[illegible]

[illegible]·[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]DNA[illegible]”[illegible]·[illegible]DNA[illegible]20[illegible]50[illegible][1][illegible]DNA[illegible]DNA[illegible]

[illegible]·[illegible]DNA[illegible]20[illegible]30[illegible]20[illegible]·[illegible]Ernest Rutherford[illegible]1895[illegible]1919[illegible]α[illegible]

[illegible]20[illegible]40[illegible]·[illegible]

[illegible]DNA[illegible]1946[illegible]

※※※

[illegible]19[illegible]·[illegible]Paul Ehrlich[illegible]“[illegible]……[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]A[illegible]“[illegible]”[illegible]α—[illegible]β—[illegible][2][illegible]70[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”

[illegible]deus ex machina[illegible]

[illegible]

※※※

[illegible]DNA[illegible]DNA[illegible]DNA[illegible]

[illegible]DNA[illegible]X[illegible]“[illegible]”[illegible]

X[illegible]X[illegible]“[illegible]”[illegible]X[illegible]X[illegible]·[illegible]Linus Pauling[illegible]·[illegible]Robert Corey[illegible]1954[illegible]

[illegible]DNA[illegible]X[illegible]DNA[illegible]X[illegible]DNA[illegible]

※※※

20[illegible]50[illegible]1950[illegible]J. T.[illegible]J. T. Randall[illegible]·[illegible]1951[illegible]1[illegible]

[illegible]“[illegible]DNA[illegible]”[illegible]DNA[illegible]DNA[illegible]

[illegible]DNA[illegible]X[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]Strand Palace Hotel[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]Marie Curie[illegible]·[illegible]Dorothy Hodgkin[illegible]“[illegible]”[illegible]

DNA[illegible]DNA[illegible]DNA[illegible]X[illegible]DNA[illegible]DNA[illegible]B[illegible]DNA[illegible]A[illegible]

DNA[illegible]DNA[illegible]

[illegible]J. D.[illegible]J. D. Bernal[illegible]“[illegible]X[illegible]”[illegible]

※※※

1951[illegible]·[illegible]·[illegible]……[illegible]DNA[illegible]DNA[illegible]X[illegible]DNA[illegible]DNA[illegible]X[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]X[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”

[illegible]·[illegible]20[illegible]30[illegible]DNA[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]DNA[illegible]”[illegible]23[illegible]

[illegible]DNA[illegible]·[illegible][3][illegible]“[illegible]”

[illegible]35[illegible]12[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]20[illegible]40[illegible]DNA[illegible]DNA[illegible]

[illegible]“[illegible]”[illegible]

[illegible]·[illegible]“[illegible]”[illegible]DNA[illegible]5 000[illegible]

1951[illegible]4[illegible]“[illegible]”[illegible]“[illegible]……[illegible]X[illegible]α—[illegible]”

[illegible]DNA[illegible]“[illegible]”[illegible]X[illegible]DNA[illegible]“[illegible]”[illegible]

DNA[illegible]“[illegible]”[illegible]DNA[illegible]

※※※

[illegible]50[illegible]DNA[illegible]DNA[illegible]A[illegible]B[illegible]DNA[illegible]A[illegible]B[illegible]B[illegible]DNA[illegible]B[illegible]DNA[illegible]B[illegible]DNA[illegible]A[illegible]DNA[illegible]

[illegible]DNA[illegible]X[illegible]“[illegible]”[illegible]

1951[illegible]11[illegible]21[illegible]·[illegible]15[illegible]“[illegible]……[illegible]”[illegible]

[illegible]“[illegible]……[illegible]”[illegible]“[illegible][4][illegible]”[illegible]DNA[illegible]

[illegible]·[illegible]·[illegible]

[illegible]DNA[illegible]“[illegible]

[illegible]X[illegible]DNA[illegible]”[illegible]

※※※

[illegible]DNA[illegible]A[illegible]T[illegible]G[illegible]C[illegible]DNA[illegible]DNA[illegible]DNA[illegible]“[illegible]15[illegible]”[illegible]“[illegible]”[illegible]DNA[illegible]

[illegible]·[illegible]Ray Gosling[illegible]

[illegible]“[illegible]”[illegible]“[illegible]‘[illegible]’……[illegible]”[illegible]

[illegible]“[illegible]”[illegible]DNA[illegible]DNA[illegible]DNA[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]3[illegible]40[illegible]

※※※

[illegible]·[illegible]DNA[illegible]“DNA[illegible]”[illegible]8[illegible]DNA[illegible]

1953[illegible]1[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]A[illegible]C[illegible]G[illegible]T[illegible]DNA[illegible]DNA[illegible]DNA[illegible]“[illegible]DNA[illegible]”[illegible]

[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]

※※※

1953[illegible]1[illegible]DNA[illegible]“[illegible]”[illegible]

[illegible]·[illegible]B[illegible]DNA[illegible]DNA[illegible]

1952[illegible]5[illegible]2[illegible]DNA[illegible]X[illegible]“[illegible]B[illegible]DNA[illegible]”[illegible]6[illegible]

[illegible]DNA[illegible]“51[illegible]”[illegible]

[illegible][5][illegible]“[illegible]”[illegible]“[illegible]……[illegible]……[illegible]”[illegible]

[illegible]“[illegible]……[illegible]……[illegible]”

[illegible]DNA[illegible]“[illegible]”[illegible]

※※※

[illegible]A[illegible]T[illegible]G[illegible]C[illegible]A[illegible]T[illegible]G[illegible]C[illegible]DNA[illegible]A[illegible]

[illegible]DNA[illegible]·[illegible]Erwin Chargaff[illegible]1950[illegible]DNA[illegible]A[illegible]T[illegible]G[illegible]C[illegible]A[illegible]T[illegible]G[illegible]C[illegible]DNA[illegible]

[illegible]DNA[illegible]DNA[illegible]1952[illegible]DNA[illegible]·[illegible]“[illegible]”[illegible]

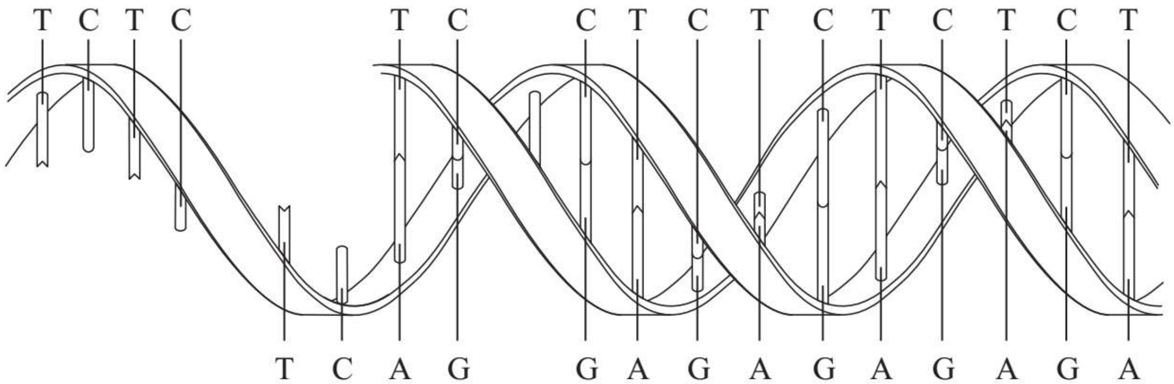
[illegible]“[illegible]‘[illegible]’[illegible]”[illegible]—[illegible]A[illegible]

[illegible]1953[illegible]2[illegible]28[illegible]A[illegible]T[illegible]C[illegible]G[illegible]“[illegible]A→T[illegible]G→C[illegible]……[illegible]”

[illegible]A[illegible]T[illegible]G[illegible]C[illegible]“[illegible]”

[illegible]A:T[illegible]G:C[illegible]“[illegible]”[illegible]

DNA[illegible]



DNA□□□A□T□□□G□C□□□□□DNA“□□”□□□—□□□□□□

□□DNA□□□□□□□□□□□□□□□□“□□□□”□□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□23□□1□□□1□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□O□□□□□□□□□□·□□□□□John Sulston□□□□“□□DNA□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□200□□□”

□□□□□□□□□□□DNA□□□□A□T□G□C□□□“□□”□□□□□—□□A□T□□□G□C□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□”□□□□□□□□□□□□□□□□□□□□□□□□□□□□□A:T□G:C□□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□□—ATGCCCTACGGGCCCATCG……
—□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

□□□□□□·□□□□Paul Valéry□□□□□□“□□□□□□□□□□□□□□□□□□□□□□□□□□□□□”□□□□□□□□DNA□□DNA□□□DNA□□□□□□□□□□□□□□□□□□

※※※

□□1953□3□□□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□
□Cavendish□□□

[illegible]DNA[illegible]

[illegible]·[illegible]“[illegible]……[illegible]”[illegible]“[illegible]……[illegible]‘[illegible]’”[illegible]1953[illegible]3[illegible]18[illegible]“[illegible]”

[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]DNA[illegible]—[illegible]A:T[illegible]G:C[illegible]”[illegible]“[illegible]”

1953[illegible]4[illegible]25[illegible]Nature[illegible]DNA[illegible]

[illegible]“[illegible]”DNA[illegible]

1962[illegible]1958[illegible]37[illegible]

※※※

[illegible]1900[illegible]·[illegible]

[illegible]·[illegible]20[illegible]

[illegible]3[illegible]20[illegible]20[illegible]·[illegible]DNA[illegible]“[illegible]”[illegible]20[illegible]50[illegible]·[illegible]·[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]DNA[illegible]

[illegible]DNA[illegible]1954[illegible]“[illegible]DNA[illegible]”[illegible]DNA[illegible]DNA[illegible]A:T[illegible]G:C[illegible]“[illegible]DNA[illegible]”

[illegible]20[illegible]50[illegible]DNA[illegible]

[illegible]DNA[illegible]20[illegible]“[illegible]”[illegible]20[illegible]“[illegible]”[illegible]

[1] [illegible]1952[illegible]1953[illegible]·[illegible]Alfred Hershey[illegible]·[illegible]Martha Chase[illegible]DNA[illegible]

[2] [illegible]

[3] 1951[illegible]·[illegible]·[illegible]Doris Lessing[illegible]“[illegible]”[illegible]“[illegible]”

[4] [illegible]DNA[illegible]X[illegible]A[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]DNA[illegible]”

[5] [illegible]DNA[illegible]

[illegible]

“[illegible]”

[illegible]

——[illegible]·[illegible]

“[illegible]”[illegible]DNA[illegible]DNA[illegible]

[illegible]A[illegible]C[illegible]G[illegible]T[illegible]DNA[illegible]RNA[illegible]A[illegible]C[illegible]G[illegible]U[illegible]“[illegible]”[illegible]

※※※

[illegible]·[illegible]George Beadle[illegible]·[illegible]Edward Tatum[illegible]1941[illegible]3[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]20[illegible]30[illegible]1937[illegible]Neurospora crassa[illegible]

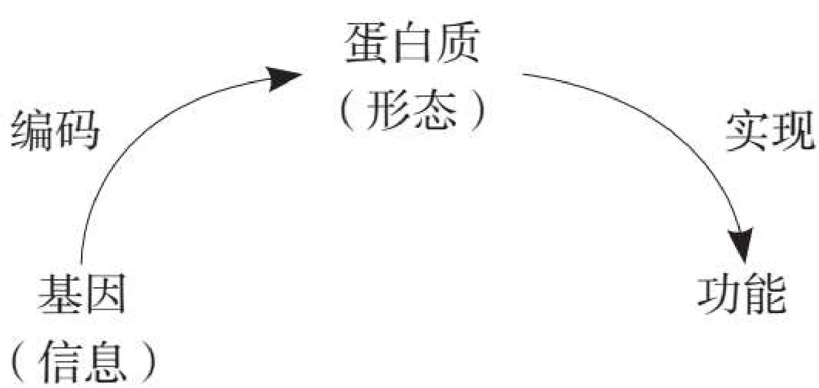
[illegible]DNA[illegible]RNA[illegible]“[illegible]”[illegible]

[illegible]X[illegible]X[illegible]

“[illegible]”[illegible]

[illegible]1945[illegible]“[illegible]”[illegible]“[illegible]”[illegible][1]

[illegible]



1958[illegible]20[illegible]

[illegible]DNA[illegible]DNA[illegible]DNA[illegible]

[illegible]DNA[illegible]ATGCCCC……[illegible]DNA[illegible]“[illegible]”[illegible]1953[illegible]“[illegible]DNA[illegible]RNA[illegible]”[illegible]RNA[illegible]“[illegible]”[illegible]

1954[illegible]·[illegible]George Gamow[illegible]“[illegible]”[illegible]·[illegible]“[illegible]getting[illegible]geting[illegible]opinion[illegible]opinnion[illegible]”

[illegible]RNA[illegible]“[illegible]”[illegible]RNA[illegible]“[illegible]”

※※※

[illegible]·[illegible]Jacques Monod[illegible]·[illegible]François Jacob[illegible]20[illegible]50[illegible]DNA[illegible]DNA[illegible]DNA[illegible]

1960[illegible]4[illegible]·[illegible]·[illegible]Sydney Brenner[illegible]“[illegible]”[illegible]DNA[illegible]

[illegible]“[illegible]”[illegible]RNA[illegible]DNA[illegible]“[illegible]”[illegible]1959[illegible]“RNA[illegible]”[illegible]

[illegible]RNA[illegible]

[illegible]

[illegible]

※※※

1960[illegible]·[illegible]Matthew Meselson[illegible]“[illegible]”[illegible]6[illegible]

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”

[illegible]RNA[illegible][2][illegible]DNA[illegible]RNA[illegible]A[illegible]G[illegible]C[illegible]U[illegible]RNA[illegible]U[illegible]DNA[illegible]T[illegible]RNA[illegible]DNA[illegible]RNA[illegible]RNA[illegible]

□□□□□□□RNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□ATGGGCC……□□□□□RNA□□□AUGGGCC……□□

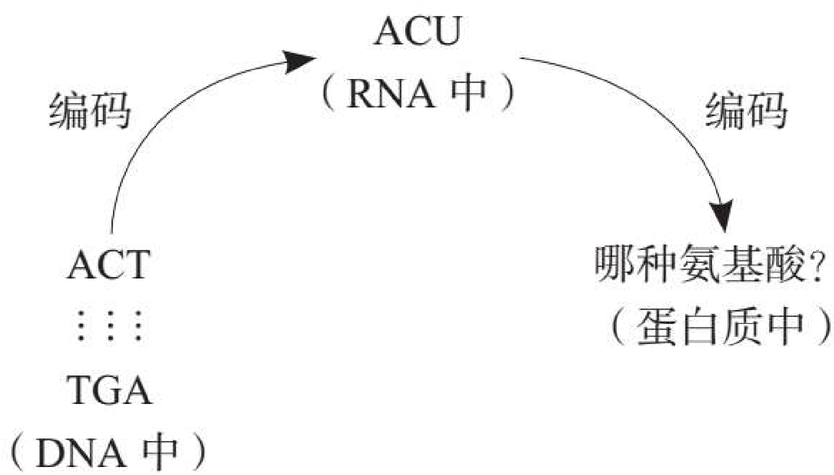
□□
□□□□□□□“□□□□”□□RNA□□DNA□□□□□□□□□□□□□□□□□□□□□□□□□□
RNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□RNA□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

※※※

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□RNA□□□□□□□□□□□□
□□□□□□□□RNA□□□□□□□□□□□□□□□□□□□□□□□□□A□C□T□G□□□□□□□
□RNA□□□□□□□□A□C□U□G□□ACT CCT GGG→ACU CCU GGG□□□□
□□□□□□RNA□□□□□□□□□□□□□□□□□□□□□□□T→U□□□□□□DNA□□□□
RNA□□□□“□□”□□□□□□□□□□□□□□

□□□□□□□□□□□□□□□A□C□T□G□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□20□□□□□□□□□□□□□□□□□□□□□20□□□□□□□□□□□□□□□□□
□□□□□□□“□□□□□□□□□□□□□□□□□□□□□□□□□”

□□□□□□□□□□□□□□□□□□□□□□□A□C□T□□□□□□□□□□□□□□□□□□□□□□□
□□□
□□act□□□□□tac□□□□□cat□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□RNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□RNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

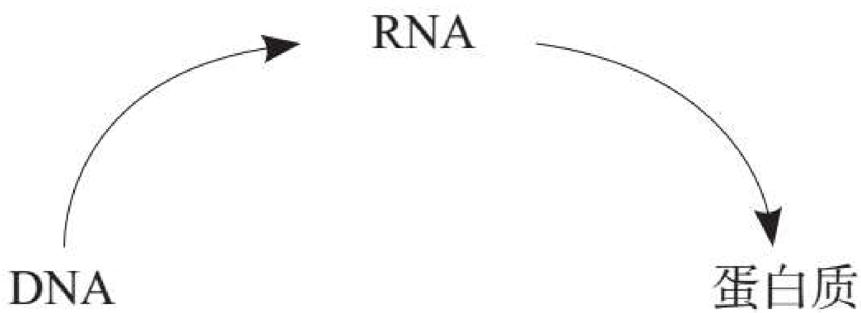


□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□”□□□□□□□□□□□DNA□□□□□□□□ACT□□□□□□□□□□□□□[3]□

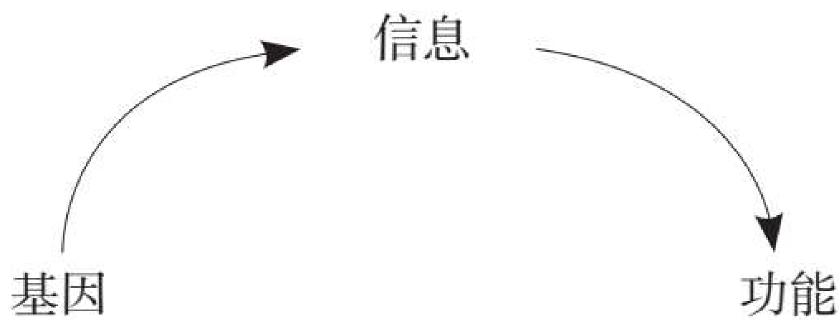
□□□□□□□□□□□□□□□□□□□□□□□1961□□·□□□□□Marshall Nirenberg□□□□□□·□□□□□Heinrich Matthaei□□□□·□□□Philip Leder□□□□□□□□□□□□□□□□□□□□□□□□□□□·□□□□Har Khorana□□□·□□□□Severo Ochoa□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

□□□1965□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□□□□ACT□□□□□□CAT□□□□□□□□□□□□□□□□□□□□□□CGT□□□□□□□□□□□□□□□DNA□□□ACT—GAC—CAC—GTG□□□□□□□□□□□□□□□□□□RNA□□□□RNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ATG□□□□□□□□□□□□□□□□□□□□□□□□□TAA□TAG□TGA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

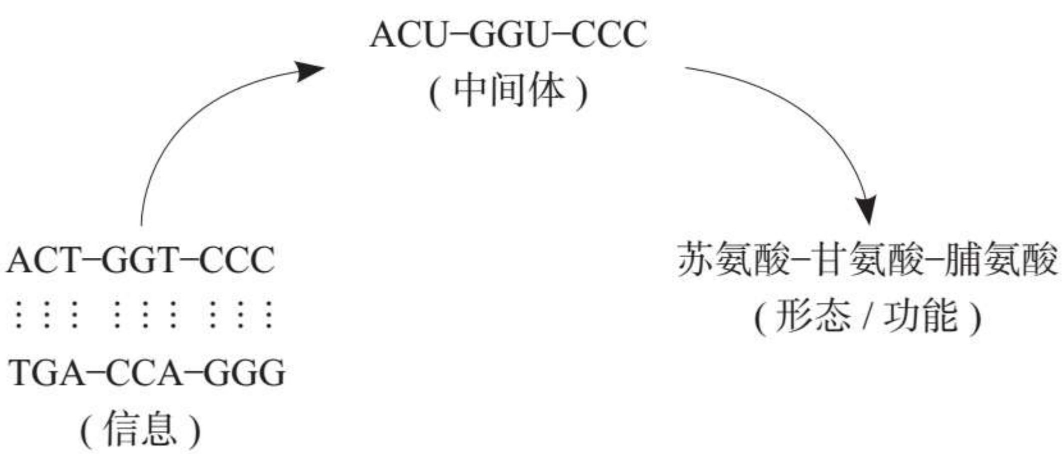
□□□□□□□□□□□□□


RNA
DNA
蛋白质

[illegible]


信息
基因
功能

[illegible]


ACU−GGU−CCC
(中间体)
ACT−GGT−CCC
TGA−CCA−GGG
(信息)
苏氨酸−甘氨酸−脯氨酸
(形态 / 功能)

[illegible]·[illegible]“[illegible]”（the central dogma）[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible][4][illegible][5][illegible]DNA[illegible]RNA[illegible]RNA[illegible]

※※※

[illegible]6[illegible]pandu roga[illegible]Ga[illegible]chwechweechwe[illegible]Ewe[illegible]nuiduidui[illegible]

1904[illegible]·[illegible]Walter Noel[illegible]·[illegible]James Herrick[illegible]·[illegible]Ernest Irons[illegible]

[illegible]“[illegible]”[illegible]

[illegible]1951[illegible]·[illegible]Harvey Itano[illegible]·[illegible]5[illegible][6]

※※※

[illegible]“[illegible]”[illegible]B[illegible]DNA[illegible]GAG[illegible]GTG[illegible]B[illegible]

□□
□□
□□□□□□□□□□□□□“□□□□□□□”□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

□□
□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□
□□□

[1] □□“□□”□□
□□□□□□□□□□□□□□□□□□□

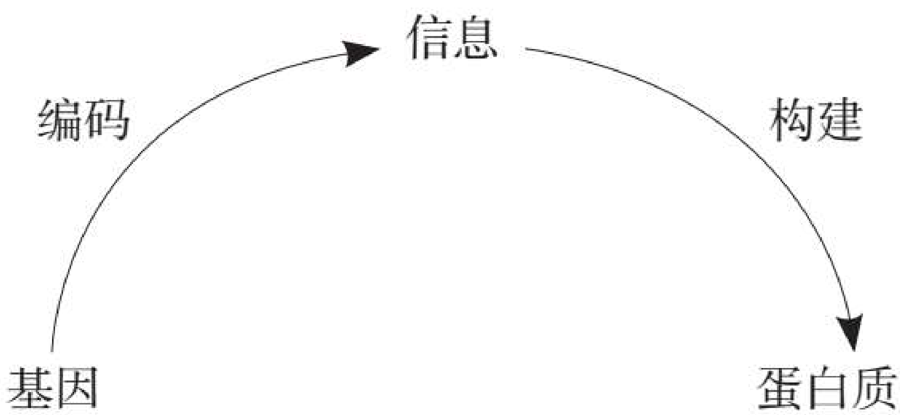
[2] 1960□□□□□·□□□□□□·□□□□□□□□□□□□□□□□□“RNA□□□□”□□□/□□□
□□□□□/□□□□□□□□□□□□□□□□□□□□

[3] □□□□□□□□□□□□“□□□□□”□□□□□□□□□□□□□□□□□□□□□AC□TC□□
□□□□□□□□□□□□□□16□□□□□□□□□□□□20□□□□□□□□□□□64□□□□□□□□
20□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□”□“□□”□□□□□□□□
□□□□□□□□256□□□□□□□□□□20□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□

[4] □□□□□□“□□□□”□□RNA□□□□□□□DNA□□□□□·□□□Howard
Temin□□□□·□□□□□David Baltimore□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□

[5] □□□□□□□□□□□□□□□□RNA□□□□□DNA□□□□□□□□□□□□□□□□□□□□
DNA□□□RNA□□□RNA□□□□□□□□□□□□□□□□□□“□□□□”□

[6] □□·□□□□□Vernon Ingram□□□□□□□□□□□□□□□□□□□·□□□□□□□


信息
编码
构建
基因
蛋白质

※※※

[illegible]Escherichia coli[illegible]1940[illegible]20[illegible]1[illegible]2[illegible]4[illegible]8[illegible]16[illegible]

[illegible]·[illegible]1937[illegible]·[illegible]1940[illegible]6[illegible]

[illegible]“[illegible]”[illegible]1939[illegible]·[illegible]Maurice Chevalier[illegible]“[illegible]”[illegible]

[illegible]1940[illegible]

[illegible]“[illegible]”[illegible]diauxie[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]20[illegible]40[illegible]

[illegible]20[illegible]50[illegible]·[illegible][1]

[illegible]·[illegible]（Arthur Pardee[illegible]

[illegible]DNA[illegible]RNA[illegible]RNA[illegible]RNA[illegible]RNA[illegible]RNA[illegible]

[illegible]RNA[illegible]“[illegible]”[illegible]operon[illegible][2]

[illegible]

※※※

[illegible]DNA[illegible]RNA[illegible]

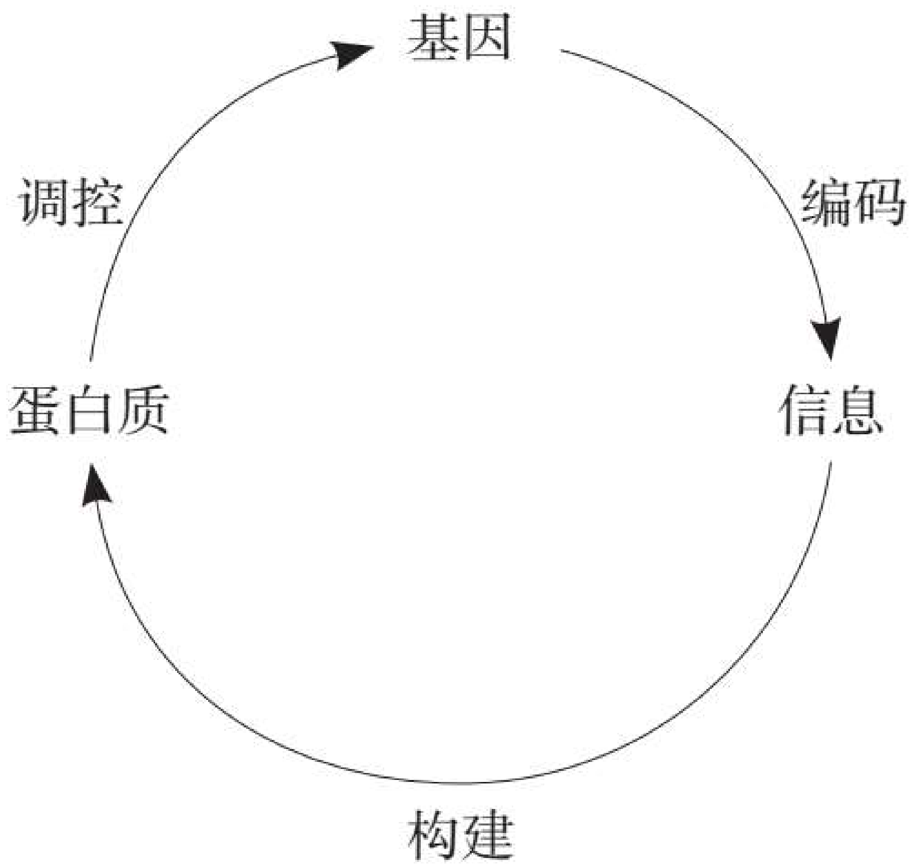
[illegible]DNA[illegible]

[illegible]1910[illegible]DNA[illegible]“[illegible]”[illegible]

> “[illegible]”

1959[illegible]DNA[illegible]6[illegible]Pa-Ja-Mo[illegible]“[illegible]”[illegible]pajama[illegible]PaJa-Mo[illegible]

[illegible]“[illegible]”[illegible]14[illegible]



Pa-Ja-Mo[illegible]

[illegible]“[illegible]……[illegible]”[illegible]·[illegible]

[illegible]“[illegible]”[illegible]

“[illegible]”[illegible]

“[illegible]”[illegible]

“[illegible]”

“[illegible]”

“[illegible]”[illegible]“[illegible]”

[illegible] [3]

※※※

[illegible]

[illegible]DNA[illegible]“[illegible]”[illegible]
1953[illegible]“[illegible]DNA[illegible]”[illegible]DNA[illegible]DNA[illegible]DNA[illegible]DNA[illegible]DNA[illegible]

DNA[illegible]DNA[illegible]1957[illegible]·[illegible]DNA[illegible]

[illegible]1958[illegible]“[illegible]”[illegible]DNA[illegible]DNA[illegible]A[illegible]C[illegible]G[illegible]T[illegible]DNA[illegible]A[illegible]T[illegible]G[illegible]C[illegible]DNA[illegible]

[illegible]1960[illegible]“[illegible]5[illegible]DNA[illegible]‘[illegible]’”[illegible]“[illegible]

[illegible]”[illegible]DNA[illegible]

[illegible]DNA[illegible][4][illegible]DNA[illegible]DNA[illegible]DNA[illegible]

[illegible]recombination[illegible]“R”[illegible]

[illegible]“[illegible]”[illegible]DNA[illegible]

[illegible]“[illegible]”[illegible]

[illegible]DNA[illegible]A[illegible]T[illegible]DNA[illegible]X[illegible]DNA[illegible]

[illegible]DNA[illegible]“[illegible]”[illegible][5]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]DNA[illegible]X[illegible]“[illegible]”[illegible]

[illegible]

[illegible] DNA [illegible]·[illegible]·[illegible]（Dorian Gray）[illegible] DNA [illegible] DNA [illegible]

※※※

[illegible] DNA [illegible]

[illegible] DNA [illegible] RNA [illegible] DNA [illegible] RNA [illegible] RNA [illegible] DNA [illegible] DNA [illegible] DNA [illegible] DNA [illegible][6]

[illegible]“[illegible]”[illegible]（Cézanne）[illegible]“[illegible]”[illegible] DNA [illegible]

※※※

[illegible]

[illegible]“[illegible]”[illegible] 20 [illegible] 20 [illegible] 20 [illegible] 40 [illegible] 50 [illegible] DNA [illegible]

[illegible] 20 [illegible] 50 [illegible] 70 [illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]19[illegible]20[illegible]“[illegible]”[illegible]

[1] [illegible]·[illegible]André Lwoff[illegible]20[illegible]50[illegible]

[2] 1957[illegible]“[illegible]”[illegible]1966[illegible]·[illegible]·[illegible]—[illegible]Benno Muller-Hill[illegible]·[illegible]Mark Ptashne[illegible]·[illegible]Nancy Hopkins[illegible]

[3] [illegible]

[4] [illegible]DNA[illegible]DNA[illegible]

[5] □□□·□□□□□□Barbara McClintock□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□“□□□□”□jumping gene□□□□□□□□1983□□□
□□□□□

[6] □□□·□□□
□Evelyn Witkin□□□□□·□□□□Steve Elledge□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“R”□□□□□□□□□□□“□□”□repair□
□□□□□□□□□□□□□□□□□□□□□□□□□□

[illegible]
[illegible]

[illegible]

——[illegible]·[illegible]Richard Dawkins[illegible]
[illegible]The Selfish Gene[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

——[illegible]·[illegible]William Blake[illegible]
[illegible]The Fly[illegible]

[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

※※※

[illegible]

[illegible]

※※※

20[illegible]50[illegible]·[illegible]Edward Lewis[illegible]20[illegible]10[illegible]

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]·[illegible]“[illegible]”[illegible]

· — Christiane Nüsslein-Volhard · Eric Wieschaus 1979

— — — "　"

"　" GPS "　"

20 80 — "bicoid" "　" 1986 —

1986 1990 — 8

"—　"

"　"

[1]

“ ”

1885 · Max Müller “ ”

※※※

· Leo Lionni “ ”

700

“ ”

20 60 · “ ” 37

· Arundhati Roy 19 Caenorhabditis elegans

[illegible]“[illegible]”

[illegible]20[illegible]70[illegible]·[illegible]·[illegible]1974[illegible]·[illegible]Robert Horvitz[illegible]

[illegible]“[illegible]”[illegible]959[illegible]1 031[illegible]20[illegible]70[illegible]959[illegible]

※※※

[illegible]959[illegible]“[illegible]12[illegible]48[illegible]60[illegible]”

[illegible]20[illegible]70[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]20[illegible]80[illegible]959[illegible]1 090[illegible]131[illegible]131[illegible]“[illegible]”[illegible]

[illegible]1972[illegible]·[illegible]John Kerr[illegible]“[illegible]”[illegible]necrosis[illegible]“[illegible]”[illegible]blackening[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]apoptosis[illegible]

[illegible]“[illegible]”[illegible]

[illegible]131[illegible]“[illegible]”[illegible]“[illegible]”[illegible]ced[illegible]C. elegans death[illegible]

[illegible]1985[illegible]·[illegible]Stanley Korsmeyer[illegible]BCL2[illegible][2][illegible]BCL2[illegible]ced9[illegible]ced9[illegible]

[illegible]“[illegible]”[illegible]BCL2[illegible]

※※※

[illegible]·[illegible]David Hirsh[illegible]·[illegible]Judith Kimble[illegible]“[illegible]”[illegible]

[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]‘[illegible]’[illegible]……[illegible]”[illegible]

[illegible]1978[illegible]“[illegible]”[illegible]F[illegible]

※※※

[illegible]“[illegible]”[illegible]

[illegible]12[illegible]

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□12□□□□□□□□□□□
□□□□8□□□□□□□□□□□□□□□□□□□□3□□□□□□□□□□□□□□□□□□□□□□□□
12□8□3□□
□□
□□□□□□□□□“□□”□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

□□□□□□□□□□□□□“……□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□……□
□□
□□□□□□□□□□□□□□□□□□□3□□□□□□□□□□□□□□□□□□□□□□□”

□□□□□□□·□□□Antoine Danchin□□□□□□□□□□□□□□□□□□□□□□□□□□
□□
□□□□10□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□

□□□□“□”□□
□□
□□□□□□□□

□□
□□□2□□□□□□
□□
□□□□□□□□□□□□□“□□□□□□□□□□□□□□□□□□□□□□”

※※※

□□□·□□
□□
□□□□□□□□□□□□□□□□□□□□□□□□□1:20□□□□□□□□□□□□□□□□□□□□□□
□□□□7□□□□□□□□□□□□□□“□□”□□□□“□□”□□□□□□□□□□□□□□□Ⅷ
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□Ⅷ□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□Ⅷ□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□

□□
□□

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

※※※

[illegible]20[illegible]70[illegible]1971[illegible]4[illegible]“[illegible]”[illegible]

1971[illegible]“[illegible]……[illegible]5[illegible]10[illegible]25[illegible]100[illegible]……[illegible]”

[illegible]“[illegible]”[illegible]·[illegible]Gordon Tomkins[illegible]“[illegible]——[illegible]”

※※※

[illegible]1978[illegible]1979[illegible]

[illegible]

[illegible]“[illegible]”

[illegible]

[illegible]

[illegible]

[illegible]“[illegible]”

“[illegible]”[illegible]

[illegible]“[illegible]”

[illegible]“[illegible]”[illegible]“[illegible]”

[1] [illegible]

[2] [illegible]·[illegible]David Vaux[illegible]·[illegible]Suzanne Cory[illegible]BCL2[illegible]

[illegible]

“[illegible]”
[illegible]1970–2001[illegible]

[illegible]

——[illegible]·[illegible]

[illegible]……[illegible]

——[illegible]·[illegible]

[illegible]
“[illegible]”

> [illegible]
>
> ——[illegible]·[illegible]2[illegible]2[illegible]

1968[illegible]·[illegible]Paul Berg[illegible]La Jolla[illegible]11[illegible]41[illegible]“[illegible]”[illegible]Pollock[illegible]Diebenkorn[illegible]Newman[illegible]Frankenthaler[illegible]

[illegible]·[illegible]·[illegible]Renato Dulbecco[illegible]

[illegible]40[illegible]SV40[illegible]“[illegible]”[illegible]·[illegible]Peter Medawar[illegible]“[illegible]”[illegible]

[illegible]SV40[illegible]DNA[illegible]DNA[illegible]7[illegible]21 000[illegible]SV40[illegible]SV40[illegible]DNA[illegible]

□□SV40□□□□□□□□□□□□□□□□□□□□□□□□□□□□SV40□□□□□□□□□□□□
□□□SV40□
□□□
□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□”□□□□□□□□□□□□□□
□□□□□

※※※

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□SV40□□□□□□□□□□
□DNA□□□
□□□□□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□□□□□SV40□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□SV40 DNA□□□□□□□□□□□□□□DNA□□
□□□[1]

□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□□□□1969□□□□·□□□Peter
Lobban□□□
□□□
□□□
□□□□“□□”□□□
□□□·□□□Dale
Kaiser□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□
□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□SV40□□□□□□□□□□□□□□
□□□□□□□□□□1971□□□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□□□“□□
□□”□□□□□□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□SV40□
□□□
□□□□□□□□□□□□□“□□”□SV40□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□

※※※

□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□20□□60□□□□□□□□□□□□□□□□□□□□□□□□□□□□□DNA

[illegible]“[illegible]”[illegible]DNA[illegible]

[illegible]“[illegible]”DNA[illegible]DNA[illegible]X[illegible]DNA[illegible]DNA[illegible]“[illegible]”[illegible]“ligare”[illegible]DNA[illegible]DNA[illegible]“[illegible]”[illegible]

[illegible]DNA[illegible]DNA[illegible]DNA[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]DNA[illegible]DNA[illegible]

[illegible]DNA[illegible]

[illegible]“[illegible]DNA[illegible]”[illegible]10[illegible]

※※※

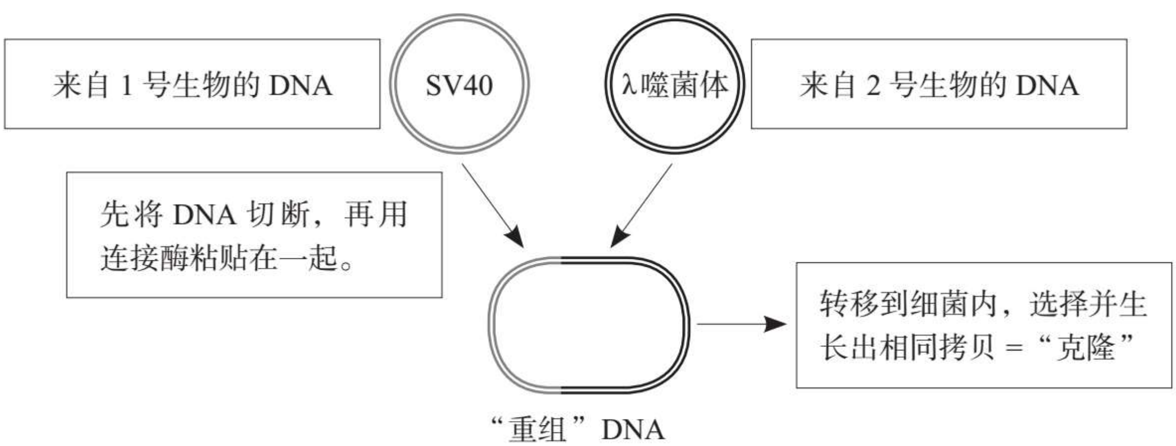
1970[illegible]·[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]DNA[illegible]

[illegible]DNA[illegible]DNA[illegible]DNA[illegible]

[illegible]SV40[illegible]λ[illegible]DNA[illegible]

[illegible]λ[illegible]SV40[illegible]“[illegible]”[illegible]SV40[illegible]λ[illegible]DNA[illegible]

[illegible]“[illegible]DNA”[illegible]“[illegible]”[illegible]DNA[illegible]DNA[illegible]“[illegible]:[illegible]”[illegible]“[illegible]”[illegible]



[illegible]·[illegible]“[illegible]”DNA[illegible]

※※※

[illegible]·[illegible]Janet Mertz[illegible]“[illegible]”[illegible]10[illegible]

[illegible]SV40[illegible]SV40[illegible]

[illegible]SV40[illegible]DNA[illegible]SV40[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]

※※※

1971[illegible]6[illegible]SV40[illegible]

[illegible]

[illegible]·[illegible]Robert Pollack[illegible]“[illegible]”[illegible]

[illegible]SV40[illegible]SV40[illegible]20[illegible]70[illegible]“[illegible]”[illegible]·[illegible]“[illegible]

[illegible]……[illegible]……[illegible]Prometheus[illegible]Herostratus[illegible][2][illegible]”

[illegible]“[illegible]”[illegible]SV40[illegible]SV40[illegible]SV40[illegible]

[illegible]SV40[illegible]“[illegible]……[illegible]”[illegible]SV40[illegible]DNA[illegible]

[illegible]DNA[illegible]·[illegible]Herbert Boyer[illegible]EcoR1[illegible]DNA[illegible]DNA[illegible][3][illegible]“[illegible]DNA[illegible]……[illegible]DNA[illegible]DNA[illegible]”[illegible]“[illegible]DNA”[illegible]

※※※

1972[illegible]11[illegible]—[illegible]DNA[illegible]·[illegible]DNA[illegible]1936[illegible]([illegible]20[illegible]60[illegible]

1966[illegible]UCSF[illegible]DNA[illegible]DNA[illegible]DNA[illegible]EcoR1[illegible]DNA[illegible]

※※※

·Stanley Cohen
“ ”
· “ ”
DNA

·Stan Falkow
Waikiki
Kishke Knish

“ ”
A+B A B
“ ”
DNA

DNA

[illegible]“[illegible]”

[illegible]“[illegible]——”

[illegible]“[illegible]……[illegible]……”

[illegible]“[illegible]”[illegible]“[illegible]EcoR1[illegible]DNA[illegible]DNA[illegible]DNA[illegible]DNA[illegible]”

[illegible]—[illegible]

※※※

[illegible]1973[illegible]101[illegible]“[illegible]”[illegible]

1973[illegible]2[illegible]DNA[illegible]

[illegible]

[1] [illegible]SV40[illegible]DNA[illegible]SV40[illegible]

[2] [illegible]——[illegible]

[3] [illegible]·[illegible]Ron Davis[illegible]EcoR1[illegible]EcoR1[illegible]SV40[illegible]DNA[illegible]“[illegible]”[illegible]

[illegible]
[illegible]

[illegible]

——[illegible]·[illegible]

[illegible]

——[illegible]·[illegible]Richard Powers[illegible]Orfeo[illegible]

[illegible]“[illegible]”[illegible]DNA[illegible]A[illegible]C[illegible]G[illegible]T[illegible]“[illegible]”[illegible]ACT[illegible]CAT[illegible]GGT[illegible]“[illegible]”[illegible]ACT—CAT—GGT[illegible]—[illegible]—[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]

[illegible]DNA[illegible]DNA[illegible]DNA[illegible]A[illegible]C[illegible]G[illegible]T[illegible]DNA[illegible]DNA[illegible]“[illegible]”[illegible]

※※※

[illegible]20
[illegible]60[illegible]·[illegible]Frederick Sanger[illegible]
[illegible]20[illegible]50[illegible]
[illegible]1921[illegible]·[illegible]Frederick Banting[illegible]
[illegible]·[illegible]Charles Best[illegible]1[illegible]0.45[illegible]
[illegible]20[illegible]20[illegible]Eli Lilly[illegible]

[illegible]—[illegible]—[illegible]—[illegible]—[illegible]—[illegible]—[illegible]
[illegible]1958[illegible]

1955[illegible]1962[illegible]
[illegible]DNA[illegible]“[illegible]”[illegible]
[illegible]1962
[illegible]MRC[illegible]
[illegible]·[illegible]DNA[illegible]

[illegible]DNA[illegible]
[illegible]·[illegible]DNA[illegible]

※※※

20[illegible]60[illegible]DNA[illegible]
[illegible]DNA[illegible]
[illegible]DNA[illegible]
[illegible]DNA[illegible]DNA[illegible]

1971[illegible]
[illegible]DNA[illegible]

□□□
□□□□□□□□□□□□□□□□□□

□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□DNA□□□□□□□
□□□□□□□□□A□C□T□G□C□C□C□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□□□□
□□□□□□□□□·□□□□□□□□□□□□□□□□□□□

1971□□□□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□□□□·□□□□
□Walter Gilbert□□□□·□□□□□Allan Maxam□□□□□DNA□□□□□□□□
□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□1975□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□A□C□G□T□□□□□□□□□□□□□□□□□
□□□□□□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□A□□□□T□G□□□□□□□

1977□2□24□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ΦX174□
□□□DNA□□□□□ΦX174□□□□□□□□□□□□□□5 386□□□□□□□□□□□
□□□“□□□□□□
□□□□□□□□□□□□□□□□□□□□□9□□□□□□□□□□□□”□□□□□□□□□□□
□□□

※※※

□□□
□□□□□□□□□□□□□□□□□□□□1977□□□□□□□·□□□□Richard
Roberts□□□□·□□□Phillip Sharp□□□□□□□□□□□□□□□□□□□□DNA
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□
□□□□□□ATG□□□□□□□□□□□□□□□□□“□□”□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□
□□□□□□□

□□□□□“structure”□□□□□□□□□□□□□□□□□□□□“structure”□□□□□□
□□
□“structure”□□□□DNA□□□□□□□□□s…tru…ct…ur...e□□□□

[illegible]…[illegible]DNA[illegible]DNA[illegible]RNA[illegible]RNA[illegible]RNA[illegible]s…tru…ct…ur…e[illegible]structure[illegible]RNA[illegible]RNA[illegible]“[illegible]”[illegible]

[illegible]DNA[illegible]s…tru…ct…ur…e[illegible]cure[illegible]true[illegible]g…e…n…om…e[illegible]gene[illegible]gnome[illegible]om[illegible]c…om…e…t[illegible]·[illegible]Wally Gilbert[illegible]“[illegible]”[illegible]exon[illegible]“[illegible]”[illegible]intron[illegible]

[illegible]DNA[illegible]DNA[illegible]DNA[illegible]DNA[illegible]This……is……the……(…)…s…truc…ture……of……your…… gen…om…e.

[illegible]DNA[illegible]gen…ome…e[illegible]DNA[illegible]

[illegible]20[illegible]60[illegible]X[illegible]“[illegible]”

[illegible]“[illegible]”[illegible]·[illegible]1955[illegible]DNA[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible][1]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible][2]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

1970[illegible]1980[illegible]1969[illegible]1979[illegible]

1980[illegible]12[illegible]·[illegible]·[illegible]·[illegible]DNA[illegible]“[illegible]”[illegible]·[illegible]“[illegible]DNA[illegible]……[illegible]……[illegible]”

※※※

[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]”

[illegible]T[illegible]T[illegible]T[illegible]T[illegible]T[illegible]

[illegible]T[illegible]T[illegible]culprit protein[illegible]

[illegible]T[illegible]T[illegible]T[illegible]RNA[illegible]T[illegible]“RNA[illegible]”[illegible]“[illegible]”[illegible]

1970[illegible]·[illegible]·[illegible]RNA[illegible]DNA[illegible]RNA[illegible]DNA[illegible]“[illegible]”[illegible]

[illegible]RNA[illegible]“[illegible]”[illegible]“[illegible]”[illegible][3][illegible]T[illegible]T[illegible]T[illegible]RNA[illegible]1984[illegible]T[illegible]

[illegible]“[illegible]……[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

[1] [illegible]

[2] [illegible]·[illegible]·[illegible]“[illegible]”

[3] [illegible]·[illegible]·[illegible]Argiris Efstratiadis[illegible]·[illegible]Fotis Kafatos[illegible]DNA[illegible]

[illegible]
[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

——[illegible]·[illegible]
Julius Caesar[illegible]

[illegible]

——[illegible]·[illegible]

[illegible]2 000[illegible]12[illegible]Caelus[illegible]

1972[illegible]·[illegible]DNA[illegible]2 000[illegible]

[illegible]80[illegible]“[illegible]”[illegible]DNA[illegible]—[illegible]

[illegible]1971[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”“[illegible]……[illegible]”

[illegible]

[illegible]“[illegible]……[illegible]”

※※※

1973[illegible]1[illegible]Asilomar[illegible]80[illegible]“[illegible]”[illegible]Asilomar I[illegible]SV40[illegible]“[illegible]”[illegible]·[illegible]Marianne Dieckmann[illegible]

[illegible]Biohazards in Biological Reserch[illegible]“[illegible]”

1973[illegible]

[illegible]

[illegible]·[illegible]·[illegible]Norton Zinder[illegible]1973[illegible]4[illegible]“‘[illegible]’[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]1975[illegible]

1974[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]·[illegible]DNA[illegible]1974[illegible]DNA[illegible]

[illegible]DNA[illegible]“[illegible]……”[illegible]“[illegible]”[illegible]

1974[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

1975[illegible]2[illegible]

[illegible]2[illegible]24[illegible]

[illegible]
DNA[illegible]“[illegible]”[illegible]
DNA[illegible]DNA[illegible]“[illegible]”[illegible]

[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]·[illegible]Richard Roblin[illegible]·[illegible]Maxine Singer[illegible]“[illegible]”[illegible]

[illegible]

[illegible]NIH[illegible]DNA[illegible]

[illegible]5[illegible]“[illegible]……[illegible]”

[illegible]

[illegible]8[illegible]

※※※

[illegible]1939[illegible]8[illegible]·[illegible]Albert Einstein[illegible]·[illegible]Leo Szilard[illegible]“[illegible]”[illegible]“[illegible]……[illegible]”[illegible]“[illegible]……[illegible]”[illegible]1942[illegible]

[illegible]

[illegible]·[illegible]Alan Waterman[illegible]1962[illegible]“[illegible]……[illegible]”

[illegible]DNA[illegible]“[illegible]”[illegible]1973[illegible]

[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]10%[illegible]……[illegible]”

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]……[illegible]DNA[illegible]……[illegible]”[illegible]

※※※

1993[illegible]

[illegible]DNA[illegible]

[illegible]·[illegible]“[illegible]”

[illegible]

[illegible]DNA[illegible]DNA[illegible]

[illegible]

[illegible]
“[illegible]”

[illegible]

——[illegible]·[illegible]

[illegible]

——[illegible]·C.[illegible]（Arthur C. Clarke）

[illegible]·[illegible]·[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]1974[illegible]5[illegible]“[illegible]”[illegible]

[illegible]·[illegible]（Joshua Lederberg）[illegible]“[illegible]”[illegible]5[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”

[illegible]·[illegible]（Niels Reimers）[illegible]UCSF[illegible]DNA[illegible]“[illegible]”[illegible]

□□□□□□□□□1974□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□DNA□□□□□□□□

□□“□□□□□□
□□□DNA□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□”□□□□□□□□□□□□□□□□□□□□□□□
□□□
□□□□□□□□□□□□□□□□□□□□□□DNA□□“□□”□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□

1975□□□
□□□□□□□□□□□□□□□□□□5□□□□□□11□□□□□□□□□□□□□□□□□□□□□□□
□□□

※※※

1975□□□□28□□□□□□□□□□·□□□□Robert Swanson□□□□□□□□□□□□
□·□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□DNA”□□□□□
□□DNA□□□□□
□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□Berg□□□□□□□□□□□□□Boyer□
□□
□□□□□□□□□□□□□□□□□□□□□□□B□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□10□□□□□□

1976□1□□
□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□
□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

□□□□□10□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□
□□
□□
□□
□□
□□□□□□□□□□□□□□□□□□□□□□□□

[illegible]3[illegible]3[illegible]500[illegible]
[illegible]
[illegible]Kleiner Perkins[illegible]50[illegible]
[illegible]10[illegible]
[illegible]“[illegible]”[illegible]

[illegible]
[illegible]
[illegible]8 000[illegible]1[illegible]
[illegible]
[illegible]“HerBob”[illegible]
[illegible]“[illegible]
[illegible]”[illegible]Gen-en-tech[illegible]

※※※

[illegible]·[illegible]Greta Garbo[illegible]·[illegible]
[illegible]Paul Langerhans[illegible]1869[illegible]
[illegible]“[illegible]
[illegible]”[illegible]20[illegible]·[illegible]Oskar
Minkowski[illegible]·[illegible]·[illegible]Joseh von Mering[illegible]
[illegible]

[illegible]
[illegible]
[illegible][1][illegible]
[illegible]
[illegible]
[illegible]“[illegible]”[illegible]isletin[illegible]
[illegible]insulin[illegible]“[illegible]”[illegible]

[illegible]20[illegible]
1921[illegible]
[illegible]
[illegible]30[illegible]1953[illegible]
[illegible]·[illegible]

[illegible]U[illegible]

[illegible]DNA[illegible]ATG,CCC, TCC[illegible]A[illegible]B[illegible]U[illegible]DNA[illegible]

[illegible]51[illegible]21[illegible]30[illegible]14[illegible]

[illegible]DNA[illegible]·[illegible]Art Riggs[illegible][2][illegible]“[illegible]”[illegible]·[illegible]Tom Kiley[illegible]“[illegible]”[illegible]Miss Nude America[illegible]

[illegible]·[illegible]DNA[illegible]“[illegible]……[illegible]”

[illegible]1977[illegible]1977[illegible]6[illegible]

[illegible]

[illegible]

[illegible]3[illegible]“[illegible]”[illegible]1977[illegible]8[illegible]“[illegible]10[illegible]15[illegible]”[illegible]“[illegible]”

※※※

[illegible]

[illegible]DNA[illegible]“[illegible]”[illegible][3][illegible]“[illegible]DNA[illegible]”[illegible]“[illegible]”

[illegible]DNA[illegible]

※※※

[illegible]“[illegible]”[illegible]1978[illegible]460[illegible]10 000[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]David Goeddel[illegible]T[illegible]“[illegible]”[illegible]CLONE OR DIE[illegible]

[illegible]DNA[illegible]“[illegible]”[illegible]

[illegible]1978[illegible]

[illegible]1978[illegible]5[illegible]DNA[illegible]7[illegible]8[illegible]1978[illegible]8[illegible]21[illegible]

※※※

1978[illegible]9[illegible]1952[illegible]methods[illegible]machines[illegible]manufactured materials[illegible]compositions of matter[illegible]“4M[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“DNA[illegible]”[illegible]1982[illegible]10[illegible]26[illegible]US Patent and Trademark Office[illegible]DNA[illegible]“[illegible]”[illegible]

※※※

[illegible]

[illegible]·[illegible]Ken Horne[illegible]1982[illegible]4[illegible]

[illegible]1982[illegible]5[illegible]8[illegible]CDC[illegible]9[illegible]Pneumocystis pneumonia[illegible]PCP[illegible]PCP[illegible]

[illegible]Kaposi’s sarcoma[illegible]4[illegible]9[illegible]

[illegible]1982[illegible]8[illegible]“[illegible]”[illegible]GRID[illegible]“[illegible]”[illegible]1982[illegible]9[illegible]GRID[illegible]A[illegible]Ⅷ[illegible]20[illegible]70[illegible]Ⅷ[illegible]Ⅷ[illegible]AIDS[illegible]

※※※

1983[illegible]·[illegible]Ⅷ[illegible]Ⅷ[illegible]T[illegible]“[illegible]”[illegible]

[illegible]Ⅷ[illegible]·[illegible]·[illegible]Ⅷ[illegible]Genetics Institute, GI[illegible]Ⅷ[illegible]Ⅷ[illegible]14[illegible]51[illegible]2 350[illegible]Ⅷ[illegible]160[illegible]Lindbergh[illegible]·[illegible]Wilbur Wright[illegible]Kitty Hawk[illegible]

[illegible]DNA[illegible]A[illegible]T[illegible]C[illegible]G[illegible]DNA[illegible]Ⅷ[illegible]Ⅷ[illegible]GI[illegible]

※※※

□□□□□□□Ⅷ□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“genome
□□□□□”□□□□□□□□□□□□□□□□□□□“gen……om……e□□……□……
□□”□□□□□□□□□□□□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□RNA□□□□□□
□□□□□□□□□□RNA□□□□DNA□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□Ⅷ□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

1983□□□□□□□□□□□□□□□□□□□□□□□□□Ⅷ□□□□□□□□□□□□□□□□□
□□□□□□□1983□12□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□1984□1□□□□□□□Ⅷ□□□
□□□□□□□□□□□□4□□□□□□□□□□□□□□□□□□□□□□□□□GI□□□□□□□
□□□□□□□□□□□Ⅷ□□□□□□□□□□□□□□□□□□□□□□□“□□”□

□□□□·□□□Gilbert White□□□□□□□□□□□□□□□□□□□□□□1987□3□□
□□□□□□□□□□□□Ⅷ□□□□□□□□□□□□□□□□□□G.M., □□□43□□□□□
□□□□□□□□□□□□□Ⅷ□□□□□□□□□□□□□□□□□□□□G.M.□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□G.M.□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□“□□□□□”□□□□□□□□□□G.M.□□□□□□□□□□□□□□□□□
□□□□□□□□□□G.M.□□□□□□□□□□□□□□□□□□□□□

※※※

G.M.□□□
□□□
□□□
□□□□□□□□□□□□□□□□□1984□4□□1985□3□□□FDA□□□□□□□□□
□□□
□□□90%□□
□□□□□□□□□□□□□□

□□□□□□□□□□□□□□□□□Ⅷ□□□□□□□□□□□□□□□□□□□□□□HIV□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□Ⅷ□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□HIV□□“□□”□□□□

※※※

DNA

250 0.025%

DNA DNA

※※※

1980 10 14 100 “GENE” 3 500 Humulin 1983

[illegible]800[illegible]1996[illegible]9 000[illegible]1998[illegible]7[illegible]36[illegible]“[illegible]”[illegible]1977[illegible]

1982[illegible]HGH[illegible]1986[illegible]α[illegible]1987[illegible]TPA[illegible]1990[illegible]1990[illegible]12[illegible]21[illegible]1991[illegible]

2001[illegible]

[illegible]1999[illegible]52[illegible]1999[illegible]12[illegible]6[illegible]

[1] [illegible]

[2] [illegible]·[illegible]Richard Scheller[illegible]·[illegible]Herbert Heyneker[illegible]·[illegible]Francisco Bolivar[illegible]DNA[illegible]·[illegible]Roberto Crea[illegible]

[3] [illegible]A[illegible]B[illegible]“[illegible]”[illegible]“[illegible]”[illegible]DNA[illegible]

[illegible]

“[illegible]”[illegible]1970–2005[illegible]

[illegible]

[illegible]

——[illegible]·[illegible]Alexander Pope[illegible]
[illegible]Essay on Man[illegible]

[illegible]

[illegible]

——[illegible]·[illegible]
[illegible]

[illegible]
[illegible]

[illegible]

[illegible]

——[illegible]·[illegible]

2014[illegible]“[illegible]”[illegible]

[illegible]

“4[illegible]24[illegible]”[illegible]

“[illegible]”

“1946[illegible]”[illegible]“2006[illegible]”

[illegible]2014[illegible]1946[illegible]

[illegible]“[illegible]”[illegible]

[illegible]

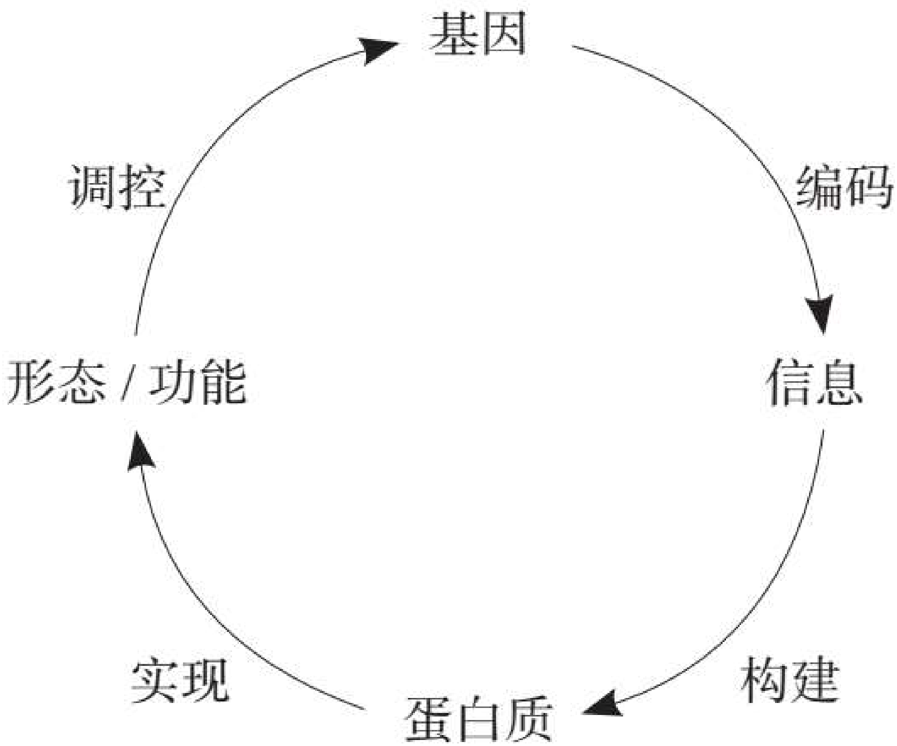
[illegible]82[illegible]

[illegible]Normal pressure Hydrocephalus[illegible]NPH[illegible]NPH[illegible]“[illegible]”[illegible]NPH[illegible]NPH[illegible]

[illegible]NPH[illegible]NPH[illegible]NPH[illegible]X[illegible]20[illegible]30[illegible]

[illegible]“[illegible]”[illegible]NPH[illegible]“[illegible]”[illegible]

[illegible]NPH[illegible]“[illegible]”[illegible]NPH[illegible]


基因
编码
信息
构建
蛋白质
实现
形态 / 功能
调控

[illegible]
[illegible]

□□□
□□□□

□□□□□□□□□□□□□□□□□□□

——□□·□□

1962□□□□□□□□□□□□□□□□□□□□DNA“□□□□”□□□“□□”□□□□□□□□□□□□□□□□□□“□□□□□□□□□□□□□□□□□□□□□□‘□□’□□□‘□□’□□□□□□□□□□□□□□”

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□”□□□□□□1943□□1962□□□□□□□□□□DNA□□1934□□□□□·□□□“□□□□□□□□□□□□□□□□□□□□□□□□□□□□□”□□□“□□□□”□□“□□□□□□□□□□□□□□□□□□”□□□□□□□□

□□□·□□□□□Victor McKusick□□□□□□□□□□□·□□□□□□□□□□□□□□□1947□□New England Journal of Medicine□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□—□□□Peutz-Jeghers□□

[illegible]20[illegible]

1899[illegible]·[illegible]Archibald Garrod[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]10[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]19[illegible]90[illegible]·[illegible]1957[illegible]·[illegible]·[illegible]·[illegible]Joseph Earle Moore[illegible]

[illegible]20[illegible]20[illegible]80[illegible]2 239[illegible]3 700[illegible]

[illegible]1998[illegible]12 000[illegible]

[illegible]19[illegible]60[illegible]300[illegible]21[illegible][1][illegible]

[illegible]

[illegible]

※※※

[illegible]

[illegible]“[illegible]”[illegible]“[illegible]

[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]20%[illegible]“[illegible]”[illegible]

[illegible]—[illegible]100%[illegible]BRCA1[illegible]BRCA1[illegible]

※※※

[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

[illegible]—[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]·[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]20[illegible]60[illegible]1961[illegible]11[illegible]Marvel Comics[illegible]Fantastic Four[illegible]·[illegible]Spider-Man[illegible]·[illegible]Peter Parker[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]1963[illegible]9[illegible]X[illegible]X-Men[illegible]X[illegible]“[illegible]”[illegible]X[illegible]20[illegible]50[illegible]X[illegible]

※※※

1966[illegible]·[illegible]Mark Steele[illegible]·[illegible]Roy Breg[illegible]1956[illegible]XX[illegible]XY[illegible]19[illegible]90[illegible]

[illegible]1968[illegible]4[illegible]J. G.[illegible]29[illegible]J. G.[illegible]6[illegible]1963[illegible]1965[illegible]

[illegible]5[illegible]J. G.[illegible]1968[illegible]4[illegible]J. G.[illegible]4[illegible]29[illegible]J. G.[illegible]

1968[illegible]5[illegible]31[illegible]J. G.[illegible]6[illegible]2[illegible]J. G.[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

1973[illegible]·[illegible]Norma McCorvey[illegible]1969[illegible]9[illegible]21[illegible]“[illegible]……[illegible]”[illegible]

1970[illegible]·[illegible]Henry Wade[illegible]·[illegible]Jane Roe[illegible]1970[illegible]“[illegible]”[illegible]

[illegible]1971[illegible]1972[illegible]“[illegible]”[illegible]1973[illegible]1[illegible]·[illegible]Henry Blackmun[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]Alexander Bickel[illegible]“[illegible]”

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]1971[illegible]1977[illegible]20%[illegible]40%[illegible]1978[illegible][2][illegible]20[illegible]70[illegible]23[illegible]—[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]1973[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]Joseph Dancis[illegible]

[illegible]“[illegible]”[illegible]

[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

1969[illegible]6[illegible]·[illegible]Hetty Park[illegible]5[illegible]·[illegible]Herbert Chessin[illegible]1970[illegible]·[illegible]Laura Park[illegible]

1979[illegible]·[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”

[1] 1958[illegible]·[illegible]Jérôme Lejeune[illegible]21[illegible]

[2] [illegible]1967[illegible]20[illegible]70[illegible]

[illegible]
“[illegible]”

[illegible]
[illegible]……[illegible]

——[illegible]·[illegible]Gerald Leach[illegible]
[illegible]Breeding Better People[illegible]1970[illegible]

[illegible]

——[illegible]·[illegible]

[illegible]·[illegible]
[illegible]“[illegible]”[illegible]“[illegible]”[illegible]
[illegible]20[illegible]
[illegible]1910[illegible]·[illegible]Sidney Webb[illegible]“[illegible]”[illegible]
[illegible]60[illegible]
[illegible]“[illegible]”[illegible]

[illegible]20[illegible]20[illegible]
[illegible]30[illegible]
[illegible]“[illegible]”“[illegible]”[illegible]“[illegible]
[illegible]”[illegible]
[illegible]
[illegible]21[illegible]X[illegible]
[illegible]

[illegible]
[illegible]“[illegible]”[illegible]

[illegible]—[illegible]“[illegible]”[illegible]

[illegible]

※※※

[illegible]20[illegible]70[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]Robert Sinsheimer[illegible]“[illegible]”

1980[illegible]·[illegible]Robert Graham[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]William Shockley[illegible]“[illegible]”[illegible]“[illegible]”[illegible]10[illegible]15[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]·[illegible]·[illegible]Ernst Mayr[illegible]·[illegible]Julian Huxley[illegible]·[illegible]James Crow[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]·[illegible]

[illegible]·[illegible]James Shannon[illegible]
[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]

[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]—[illegible]”[illegible]“[illegible]—[illegible]—[illegible]”

1976[illegible]20[illegible]70[illegible]30[illegible]“[illegible]”[illegible]

1978[illegible]“[illegible]”[illegible]

[illegible]
[illegible]

[illegible]

——[illegible]·[illegible]·[illegible]Gerard Manley Hopkins[illegible]
[illegible]Pied Beauty[illegible]

[illegible]

——[illegible]·[illegible]George Huntington[illegible]

1978[illegible]·
[illegible]David Botstein[illegible]·[illegible]Ron Davis[illegible]
[illegible]
[illegible]·[illegible]Kerry Kravitz[illegible]·[illegible]Mark
Skolnick[illegible]
[illegible]hemochromatosis[illegible]
[illegible]

[illegible]20[illegible]70[illegible]
[illegible]

[illegible]“[illegible]”[illegible]
[illegible]

[illegible]7[illegible]
[illegible]

[illegible]

[illegible]6[illegible]

[illegible]

[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]”[illegible]DNA[illegible]

[illegible]ACAAGTCC[illegible]AGAAGTCC[illegible][1][illegible]ACAAG[illegible]AGAAG[illegible]DNA[illegible]

※※※

20[illegible]70[illegible]DNA[illegible]·[illegible]Louis MacNeice[illegible]“[illegible]”[illegible]

[illegible]10[illegible]“[illegible]……[illegible]”

[illegible]“[illegible]”[illegible]DNA[illegible]X—[illegible]7[illegible]

1980[illegible]American Journal of Human Genetics[illegible]“[illegible]”[illegible]

[illegible]DNA[illegible]

※※※

1978[illegible]·[illegible]Nancy Wexler[illegible]1968[illegible]22[illegible]·[illegible]Leonore Wexler[illegible]20[illegible]50[illegible]Huntington’s disease[illegible]·[illegible]Abraham Sabin[illegible]1926[illegible]1968[illegible]5[illegible]

19[illegible]70[illegible]·[illegible]Huntington’s chorea[illegible]chorea[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]……[illegible]”[illegible]“[illegible]”[illegible]

[illegible]50%[illegible]“[illegible]”[illegible]“[illegible]……[illegible]”

※※※

[illegible]·[illegible]Milton Wexler[illegible]1968[illegible]50%[illegible]·[illegible]“[illegible]”

[illegible]·[illegible]“[illegible]”

[illegible]·[illegible]

[illegible]·[illegible]“[illegible]……[illegible]……[illegible]”

1978[illegible]5[illegible]14[illegible]1979[illegible]10[illegible]17[illegible]

[illegible]·[illegible]·[illegible]Lake Maracaibo[illegible]Barranquitas[illegible]Lagunetas[illegible]·[illegible]·[illegible]

1979[illegible]7[illegible]“[illegible]”

※※※

[illegible]

[illegible]

20[illegible]50[illegible]·[illegible]Américo Negrette[illegible]2 000[illegible]10[illegible]20[illegible]·[illegible]María Concepción[illegible]

[illegible]concepción[illegible]19[illegible]
[illegible]el mal[illegible]

※※※

1979[illegible]7[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”

[illegible]14[illegible]·[illegible]James Gusella[illegible]·[illegible]Michael Conneally[illegible]

[illegible]DNA[illegible]DNA[illegible]1983[illegible]3[illegible]4[illegible]DNA[illegible]4[illegible]DNA[illegible]

1983[illegible]8[illegible]4[illegible]—4p16.3[illegible]

[illegible]

※※※

[illegible]

[illegible]DNA[illegible]

※※※

1993[illegible]2[illegible]·[illegible]“[illegible]”[illegible]1983[illegible]4[illegible]58[illegible]10[illegible]1992[illegible]IT15[illegible]interesting transcript 15[illegible]“[illegible]”[illegible]

IT15[illegible]3 144[illegible]51[illegible]2[illegible]IT15[illegible]

[illegible]“[illegible]”

※※※

[illegible]DNA[illegible]CAGCAGCAGCAG……[illegible]17[illegible]10[illegible]35[illegible]35[illegible]40[illegible]

[illegible]“[illegible]”[illegible]DNA[illegible]CAG[illegible]Mississippi[illegible]s[illegible]“[illegible]”[illegible]50[illegible]60[illegible]Mississippi[illegible]s[illegible]12[illegible]70[illegible]80[illegible]

※※※

[illegible]1989[illegible]25[illegible]100%[illegible]20[illegible]80[illegible]20[illegible]

[illegible]1857[illegible]“[illegible]”[illegible]1595[illegible]“[illegible]……[illegible]”[illegible]

1985[illegible]Lap-Chee Tsui[illegible]“[illegible]”[illegible]DNA[illegible]DNA[illegible]7[illegible]·[illegible]Francis Collins[illegible]·[illegible]Jack Riordan[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]

[illegible]1989[illegible]7[illegible]DNA[illegible]ATGCCGGTC[illegible]

[illegible]DNA[illegible]DNA[illegible][2]

[illegible]20[illegible]90[illegible]“[illegible]”[illegible]10[illegible]30%[illegible]40%[illegible]1993[illegible]—[illegible]

※※※

1971[illegible]DNA[illegible]1993[illegible]20[illegible]50[illegible]DNA[illegible]

[illegible]“[illegible]”[illegible]B[illegible]“[illegible]”[illegible]

[illegible]20[illegible]·[illegible]·[illegible]Evelyn Fox Keller[illegible]“[illegible]DNA[illegible]”[illegible]“[illegible]‘[illegible]’[illegible]”[illegible]

“[illegible]‘[illegible]’[illegible]‘[illegible]’[illegible]……[illegible]”

1969[illegible]10[illegible]·[illegible]“[illegible]”[illegible]

“[illegible]……[illegible]20[illegible]”

[illegible]1923[illegible]J. B. S.[illegible]“[illegible]”[illegible]

[1] 1978[illegible]Y. Wai Kan[illegible]·[illegible]Andree Dozy[illegible]DNA[illegible]70[illegible]·[illegible]Maynard Olson[illegible]DNA[illegible]

[2] [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

——18[illegible]

[illegible]

——[illegible]·[illegible]

[illegible]15[illegible]16[illegible]

[illegible]

[illegible]20[illegible]70[illegible]80[illegible]10[illegible]1977[illegible]·[illegible]phiX[illegible]5 386[illegible]3 095 677 412[illegible]phiX[illegible]574 000[illegible]

※※※

[illegible]20[illegible]90[illegible]
[illegible]
[illegible]·[illegible]25[illegible]
[illegible]121[illegible]
[illegible]BRCA1[illegible]1994[illegible]
[illegible]·[illegible]“[illegible]
[illegible]”[illegible]
[illegible]

[illegible]·[illegible]“[illegible]”[illegible]“[illegible]20[illegible]80[illegible]
[illegible]DNA[illegible]”[illegible]
[illegible]30[illegible]
[illegible]DNA[illegible]
[illegible]
[illegible]“[illegible]”[illegible]
——[illegible]

※※※

[illegible]

[illegible]1872[illegible]
[illegible]·[illegible]·[illegible]Hilário de Gouvêa[illegible]
[illegible]
[illegible]
[illegible]·[illegible]“[illegible]”[illegible]
[illegible]7[illegible]·[illegible]“[illegible]”[illegible]

[illegible]20[illegible]70[illegible]·[illegible]“[illegible]”[illegible]
[illegible][1][illegible]
[illegible]

[illegible]

[illegible]·[illegible]Harold Varmus[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]X[illegible]DNA[illegible]DNA[illegible]A[illegible]T[illegible]G[illegible]C[illegible]——[illegible]

[illegible]20[illegible]80[illegible]“[illegible]”[illegible]

※※※

[illegible]20[illegible]90[illegible]·[illegible]·[illegible]Bert Vogelstein[illegible]

[illegible]“[illegible]”[illegible]

[illegible]DNA[illegible]

※※※

[illegible]1984[illegible]·[illegible]James Huberty[illegible]7[illegible]21[illegible]——[illegible]Huberty[illegible]Shouberty[illegible]“[illegible]”[illegible]

[illegible]7[illegible]NAS[illegible]NAS[illegible]19[illegible]90[illegible]20[illegible]40[illegible]30%[illegible]40%[illegible]1982[illegible]·[illegible]Irving Gottesman[illegible]40%[illegible]60%[illegible]50[illegible]75%[illegible]90%[illegible]10%[illegible]

[illegible]100%[illegible]50%[illegible]

[illegible]“[illegible]”[illegible]100%[illegible]

[illegible]

[illegible]

[illegible]30%[illegible]50%[illegible]5%[illegible]10%[illegible]

[illegible]50%[illegible]50%[illegible]15%[illegible]20%[illegible]20[illegible]

※※※

1985[illegible]·Q.[illegible]James Q. Wilson[illegible]·[illegible]Richard Herrnstein[illegible]Crime and Human Nature:The Definitive Study of the Causes of Crime[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”

[illegible]50%[illegible]100%[illegible]

20[illegible]80[illegible]Baltimore Sun[illegible]“[illegible]”[illegible]“[illegible]……[illegible]”

※※※

[illegible]1984[illegible]DOE[illegible]·[illegible]Charles DeLisi[illegible]20[illegible]80[illegible]1945[illegible]1.2[illegible]1984[illegible]12[illegible]

[illegible]20[illegible]80[illegible]1985[illegible]5[illegible]1986[illegible]3[illegible]1986[illegible]·[illegible]“[illegible]”[illegible]

[illegible]·[illegible]Kary Mullis[illegible]DNA[illegible]DNA[illegible]DNA[illegible]

[illegible]DNA[illegible]PCR（polymerase chain reaction）[illegible]

[illegible]·[illegible]（Eric Lander）[illegible]·[illegible]（Leroy Hood）[illegible]10[illegible]20[illegible]

[illegible]·[illegible]DNA[illegible]30[illegible]30[illegible]5[illegible]1[illegible]40[illegible]1 000[illegible]·[illegible]100[illegible]200[illegible]1 000[illegible]

[illegible]·[illegible]5[illegible]27[illegible]15[illegible]·[illegible]（Rufus Watson）[illegible]（White Plains）[illegible]“[illegible]”

※※※

[illegible]——[illegible]

[illegible]Human Genome Project[illegible]

[illegible]1989[illegible]“[illegible]”[illegible]

[illegible]31[illegible]1989[illegible]1[illegible]12[illegible]·[illegible]DNA[illegible]“[illegible]‘[illegible]’[illegible]”

※※※

1983[illegible]1[illegible]28[illegible]·[illegible]Waynesboro[illegible]76[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]

[illegible]“[illegible]”[illegible]1930[illegible]3[illegible]·[illegible]“[illegible]”[illegible]1932[illegible]8[illegible]A[illegible]B[illegible]C[illegible]1931[illegible]4[illegible]·[illegible]

[1] [illegible]20[illegible]70[illegible]·[illegible]·[illegible]J. Michael Bishop[illegible]

[illegible]proto-oncogene[illegible]

[illegible]
[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

——[illegible]·[illegible]Jonathan Swift[illegible]

[illegible]

——[illegible]·[illegible]Justin Gillis[illegible]2000[illegible]

[illegible]1989[illegible]·[illegible]Craig Venter[illegible]

[illegible]20[illegible]80[illegible]1986[illegible]·[illegible]“[illegible]”[illegible]

[illegible]DNA[illegible]·[illegible]·[illegible]

[illegible]DNA[illegible][1][illegible]DNA[illegible]

This.........is the......str...uc......ture... , , , ...of...your...(...gen ... ome...) ...

[illegible]

※※※

[illegible]DNA[illegible]“[illegible]”[illegible]

[illegible]struc[illegible]your[illegible]geno[illegible]

[illegible]“[illegible]”[illegible][2][illegible]1991[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”DNA[illegible]1984[illegible]Amgen[illegible]DNA[illegible]“[illegible]‘[illegible]’[illegible]”[illegible]“[illegible]”

[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]Walter Bodmer[illegible]

1992[illegible]6[illegible]10[illegible]Institute for Genome Research[illegible]IGOR[illegible]The Institute for Genomic Research[illegible]TIGR[illegible]

※※※

[illegible]TIGR[illegible]·[illegible]·[illegible]1993[illegible]·[illegible]Hamilton Smith[illegible]Haemophilus influenzae[illegible]

[illegible]stru, uctu, ucture, structu[illegible]ucture[illegible]structure[illegible]

[illegible]20[illegible]80[illegible]“[illegible]”[illegible]

1993[illegible]1995[illegible]7[illegible]“[illegible]40[illegible]”

[illegible]·[illegible]Lucy Shapiro[illegible]“[illegible]”[illegible]

※※※

[illegible]TIGR[illegible]1993[illegible]·[illegible]1989[illegible]

[illegible]1995[illegible]TIGR[illegible]TIGR[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“profundity”[illegible]“p...u...n...y”[illegible]

[illegible]10%[illegible]“[illegible]……[illegible]”

[illegible]
[illegible]20[illegible]·[illegible]Phil Green[illegible]
[illegible]

※※※

1998[illegible]5[illegible]TIGR[illegible]TIGR[illegible]HGS[illegible]TIGR[illegible]Celera[illegible]“accelerate”[illegible]

[illegible]200[illegible]300[illegible]2001[illegible]4[illegible]

[illegible]7[illegible]6 000[illegible]·[illegible]·[illegible]

※※※

1998[illegible]12[illegible]·[illegible]·[illegible]Robert Waterson[illegible]

[illegible]

□□□□□□□□□□18 891□□□□□□[3]□□□36%□□□□□□□□□□□□□□□□□□□□
□□10 000□□□□□□□□□□□□□□□□□□10 000□□□□□□□□□□□□□□□□□□□
□□
□□□□□□□□□□□□□□□10%□□□□□□□□□□□□□□□□□□□□□□□90%□□□□□
□□
□□□□□□□□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□ceh——13□□□□□□□□□□□□□□
□□
□□□□□□□□□□“□□”□□□□□□□□□□□□□□□□□□□□□□□□□□

□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□RNA□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□”□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□“□□□”□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□RNA□□□
□□□□□□□□□□□□□□□□□□□□□□□“microRNA”□□RNA□□□□□□□□□□□□
□□
□□□

※※※

□□□□□□□□□1865□□□□□□□□□□□□□□“□□”□□□□□□□□□□□□□□□□□
□□
□□
□□□□□□□DNA□□
□□□□□□□□□□□□DNA□□□□□□□□□□

20□□30□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□
□”□□□□□□□□□□□□□□□RNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□RNA□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□

□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□RNA□□□□□□□□□□

[illegible]DNA[illegible]

[illegible]

※※※

1998[illegible]12[illegible]125[illegible][4][illegible]200[illegible]DNA[illegible]3[illegible]25[illegible]22[illegible]1999[illegible]10[illegible]30[illegible]10[illegible]G—C[illegible]1999[illegible]9[illegible]17[illegible]9[illegible]Drosophila melanogaster[illegible]·[illegible]Gerry Rubin[illegible]11[illegible]·[illegible]·[illegible]90[illegible]2 500[illegible]2 500[illegible]10 500[illegible]“[illegible]DNA[illegible]”

2000[illegible]3[illegible]1934[illegible]289[illegible]177[illegible]60%[illegible]—[illegible]

[illegible]·[illegible]1794[illegible]“[illegible]”[illegible]

[illegible]13 601[illegible]5 000[illegible]“[illegible]……[illegible]……[illegible]”

[illegible]·[illegible]“[illegible]……”[illegible]“[illegible]”[illegible]

※※※

2000[illegible]5[illegible]·[illegible]Ari Patrinos[illegible]·[illegible]

[illegible]“[illegible]”[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

[illegible]·[illegible]·[illegible]2000[illegible]6[illegible]26[illegible]

※※※

2000[illegible]6[illegible]26[illegible]10:19[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]·[illegible]·[illegible]·[illegible]·[illegible]·[illegible]

[illegible]

“[illegible]·[illegible]……[illegible]”[illegible]“[illegible]12:30[illegible]”[5]

※※※

[illegible]“[illegible]”[illegible]

[illegible]·[illegible]David Haussler[illegible]·[illegible]James Kent[illegible]100[illegible]

[illegible]“[illegible]”[illegible]

[illegible]2000[illegible]“[illegible]”[illegible]“[illegible]17[illegible]‘[illegible]’[illegible]‘[illegible]’[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]GenBank[illegible]

2001[illegible]2[illegible]15[illegible]16[illegible]66 000[illegible]

“20[illegible]25[illegible]

“[illegible]DNA[illegible]DNA[illegible]”

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[1] “[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[2] [illegible]RNA[illegible]“[illegible]”[illegible]

[3] [illegible]DNA[illegible]RNA[illegible]19 500[illegible]

[4] 125[illegible]·[illegible]Mike Hunkapiller[illegible]

[5] [illegible]——[illegible]

□□□
□□□□□23□□

□□□□□□□□□□□□□□

——□□·□□□□□
□□□□□□□□□

□□□□

——□□□

□□□□□3 088 286 401□□□□□□□□□□□□□□□□□□□□□32□□□
□□

·□□□□□□□□□□□□□□□□□□□□□□□□□ATGC□□□□□□□□
□□……AGCTTGCAGGGG……□□□□□□□□□□□□□□□□□□□□□
□□150□□□□□□□□□□□□66□□

·□□□□□□□23□□46□□□□□□□□□□□□□□□□□□□□24□□□□□□
□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□

·□□□□□□□□20 687□□□□□□□□□1 796□□□□□12 000□□□□
□□□25 000□□□“□□”□“□□□□”□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□

·□□
□□
□□
□□
□□□□□□□□□□□□

·[illegible]“[illegible]”[illegible]s…tru…c… t…ure[illegible]g…en…ome[illegible]c…ome…t[illegible]

·[illegible]11[illegible]155[illegible]

·[illegible]98%[illegible]DNA[illegible]DNA[illegible]DNA[illegible]RNA[illegible]“[illegible]DNA”[illegible]

·[illegible]DNA[illegible]DNA[illegible]“[illegible]”[illegible]DNA[illegible]DNA[illegible]

·[illegible]DNA[illegible]Alu[illegible]300[illegible]

·[illegible]“[illegible]”[illegible]200[illegible]“[illegible]”[illegible]

·[illegible]“[illegible]”[illegible]RNA[illegible]

·[illegible]96%[illegible]

·1[illegible]X[illegible]1[illegible]

·[illegible]“[illegible]”[illegible]DNA[illegible]

·[illegible]DNA[illegible]RNA[illegible]RNA[illegible]DNA[illegible]——[illegible]DNA[illegible]

·[illegible]“[illegible]”[illegible]

·[illegible]

·[illegible]

·[illegible]

·[illegible]

[illegible]

[illegible]

[illegible]“[illegible]”

[illegible]2001–2015[illegible]

[illegible]

——[illegible]·[illegible]Lewis Carroll[illegible]

[illegible]Alice in Wonderland[illegible]

□□□
“□□□□”

□□□□□□□□□□□□□□□

——□□□□□□□□□□□□
□□□□·□□□□□□□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

——□□□·□□□□Franz Kafka□

□□□□□□□·□□□Everett Hughes□□□□□□□□□□□□□□□□□□□□“□□□
□”□□□
□□□
□□□
□□□□□□□□□□□□□□□□□□□□□□□

□□□
□□BRCA1□
□□□□□□□□□□□□□□□□□□□□□□□□BRCA1□□□□□□□DNA□□□□□□□
□□□□□□□□□□□□□□□BRCA1□□□“□□”□□□□□□□□□□□□□□□□
DNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□BRCA1□□□□
□□□□□□□□□□□□□□□□□□□□□m——BRCA1□□□□□□□BRCA1□□□
□□□□□□□□□□□□□DNA□□□□BRCA1□□□□□□□□□□□□□□□□□□□□□

□□□
□□□·□□□□Matt Ridley□□□□□□□□□□□□□□□□□CF□□□□□“□□□□□□
□□□
□□”

□□□
□□□
□□□□□□□□1988□□□□□□□□□□□NRC□□□□□□□□□□□□□□□□□□□□
□□□□“DNA□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

[illegible]”

[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

※※※

[illegible]19[illegible]1854[illegible]·[illegible]Louis Agassiz[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

1859[illegible]

“ …… ”

“ ” 1848 Neander Valley Neanderthal

1922 Popular Science Monthly “ ” 20 70 80 “ ” 4.5 4 5 000

EEMH

※※※

20 80 · [1]

[illegible]

[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

[illegible]

[illegible]“[illegible]”[illegible]DNA[illegible]

[illegible]37[illegible]

[illegible]

[illegible]

1985[illegible]1995[illegible]1991[illegible]20[illegible]

[illegible]1991[illegible]

2008[illegible]11[illegible]·[illegible]—[illegible]Luigi Cavalli-Sforza[illegible]·[illegible]Marcus Feldman[illegible]·[illegible]Richard Myers[illegible]51[illegible]938[illegible]642 690[illegible]10[illegible]20[illegible]“[illegible]10[illegible]”

[illegible]San tribes[illegible]Ituri[illegible]Mbuti Pygmies[illegible]“[illegible]”[illegible]1.5[illegible]3[illegible]Seward[illegible]“[illegible]”[illegible]The Out of Africa Theory[illegible]“[illegible]”[illegible]The

Recent Out of Africa Model[illegible]“[illegible]”[illegible]
ROAM[illegible]

※※※

[illegible]DNA[illegible]

[illegible]“[illegible]”[illegible]23[illegible]21 000[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]200[illegible]200[illegible]100[illegible]

[illegible]20[illegible]

[illegible]（Mitochondrial Eve）[illegible]

※※※

1994[illegible]

[illegible]20[illegible]·[illegible]·[illegible]·[illegible]

[illegible]6 000[illegible]1[illegible]700[illegible]20[illegible]·[illegible]“[illegible]1963[illegible]”[illegible]20[illegible]

※※※

[illegible][2][illegible]Mbuti[illegible]Bantu[illegible]

[illegible]·[illegible]Christopher Stringer[illegible]“[illegible]……[illegible]——[illegible]DNA……[illegible]DNA[illegible]——[illegible]”

[illegible]7.5[illegible]7[illegible]Toba[illegible]

[illegible]13[illegible]6[illegible]“[illegible]”[illegible]

[illegible]600[illegible]

※※※

[illegible]·[illegible]Wallace Sayre[illegible]

[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]85%[illegible]90%[illegible]7%[illegible]1972[illegible]·[illegible]（Richard Lewontin[illegible]—[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]X[illegible]Y[illegible]A[illegible]B[illegible]DNA[illegible]

[illegible]·[illegible]·[illegible]“[illegible]”1994[illegible]·[illegible]—[illegible]—[illegible]“[illegible]”[illegible]“[illegible]……[illegible]‘[illegible]’[illegible]……‘[illegible]’[illegible]……[illegible]”[illegible]—[illegible]“[illegible]‘[illegible]’[illegible]50[illegible]……[illegible]”

[illegible]19[illegible]20[illegible]19[illegible]The Help[illegible]Aibee[illegible]·[illegible]Mae Mobley[illegible]“[illegible]”

1994[illegible]·[illegible]—[illegible]The Bell Curve[illegible]·[illegible]·[illegible]Charles Murray[illegible]“[illegible]”[illegible]

[illegible]1985[illegible]10[illegible]IQ[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]19[illegible]1890[illegible]1910[illegible]1904[illegible]·[illegible]Charles Spearman[illegible]“[illegible]”[illegible]g[illegible]

[illegible]20[illegible]g[illegible]·[illegible]1916[illegible]“[illegible]”[illegible]100[illegible]100[illegible]100[illegible]

[illegible]

[illegible]20[illegible]40[illegible]20[illegible]50[illegible]IQ[illegible]“[illegible]”[illegible]IQ[illegible]

[illegible]g[illegible]“[illegible]”[illegible]“[illegible]”[illegible]g[illegible]“[illegible]”[illegible]·[illegible]g[illegible]“[illegible]g”[illegible]

20[illegible]60[illegible]70[illegible]·[illegible]50[illegible]·[illegible]80[illegible]“[illegible]”[illegible]g[illegible]·[illegible]Arthur Jensen[illegible]g[illegible]

※※※

g[illegible]20[illegible]50[illegible]g[illegible]20[illegible]50[illegible]0.86[illegible][3]20[illegible]80[illegible]0.74[illegible]

[illegible]g[illegible]IQ[illegible]IQ[illegible]0.42[illegible]

[illegible]0.22[illegible]IQ[illegible]IQ[illegible]
[illegible]IQ[illegible]

[illegible]g[illegible]

[illegible]IQ[illegible]IQ[illegible]156[illegible]IQ[illegible]IQ[illegible]100[illegible]100[illegible]IQ[illegible]85[illegible]15[illegible]1960[illegible]15[illegible]

[illegible]IQ[illegible]IQ[illegible]IQ[illegible]IQ[illegible]20[illegible]90[illegible]·[illegible]Eric Turkheimer[illegible]IQ[illegible]IQ[illegible]IQ[illegible]

[illegible][4]

[illegible]IQ[illegible]IQ[illegible]IQ[illegible]IQ[illegible]IQ[illegible]IQ[illegible]IQ[illegible]IQ[illegible]

[illegible]·[illegible]·[illegible]Stephen Jay Gould[illegible]·[illegible]Orlando Patterson[illegible]“[illegible]”[illegible]For Whom the Bell Curves[illegible]·[illegible]Claude Steele[illegible]IQ[illegible]“[illegible]”[illegible]IQ[illegible]IQ[illegible]IQ[illegible]

[illegible]800[illegible]IQ[illegible]105[illegible]IQ[illegible]

1976[illegible]·[illegible]Sandra Scarr[illegible]·[illegible]Richard Weinberg[illegible]106[illegible]“[illegible]”[illegible]

[illegible]IQ[illegible]IQ[illegible]IQ[illegible]IQ[illegible]g[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]8[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]Alison Gopnik[illegible]“[illegible]”

※※※

[illegible]—[illegible]

[illegible]

[illegible]

[illegible]

[1] [illegible]·[illegible]·[illegible]Émile Zuckerkandl[illegible]“[illegible]”[illegible]

[2] [illegible]

[3] [illegible]0.6[illegible]0.7[illegible]·[illegible]Leon Kamin[illegible]20[illegible]50[illegible]

[4] [illegible]

[illegible]
[illegible]

[illegible]“[illegible]”[illegible]

——[illegible]·[illegible]Paul Brodwin[illegible]
[illegible]
[illegible]Genetics, Identity, and the Anthropology of Essentialism[illegible]

[illegible]

——[illegible]·[illegible]
[illegible]The Comedy of Errors[illegible]

1942[illegible]10[illegible]6[illegible]5[illegible]Bulu[illegible]Tulu[illegible]20[illegible]40[illegible]7[illegible]

[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]1965[illegible]3[illegible]1966[illegible]1967[illegible]

[illegible]1970[illegible]20[illegible]60[illegible]

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

[illegible]

[illegible] 4 [illegible]

※※※

[illegible] Lady Gaga [illegible]“[illegible]”[illegible]

[illegible] sex [illegible] gender [illegible] gender identity [illegible]

[illegible]“[illegible]”[illegible] 200 [illegible] Galen [illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]（Anaxagoras）[illegible]400[illegible]“[illegible]”[illegible]“[illegible]—[illegible]”[illegible]

[illegible]

[illegible]1900[illegible]“[illegible]”[illegible]·[illegible]1903[illegible]“[illegible]”[illegible]

※※※

1903[illegible]·[illegible]1861[illegible]19[illegible]90[illegible]1900[illegible]·[illegible]

[illegible]1903[illegible]20[illegible]

[illegible]10[illegible]23[illegible]10[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]·[illegible]Edmund Wilson[illegible]Y[illegible]X[illegible]XY[illegible]XX[illegible]X[illegible]Y[illegible]XY[illegible]X[illegible]XX[illegible]

※※※

[illegible]XY[illegible]Y[illegible]Y[illegible]Y[illegible]Y[illegible]“[illegible]”[illegible]Y[illegible]Y[illegible]Y[illegible]

[illegible]Y[illegible]Y[illegible]Y[illegible]2014[illegible]Y[illegible]

[illegible]Y[illegible][1][illegible]

※※※

20[illegible]80[illegible]·[illegible]Peter Goodfellow[illegible] Y[illegible]“[illegible]”[illegible]Y[illegible]“[illegible]”[illegible]

※※※

[illegible]1955[illegible]·[illegible]Gerald Swyer[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]XY[illegible]“[illegible]”[illegible]XY[illegible]“[illegible]”[illegible]

[illegible]·[illegible]David Page[illegible]Y[illegible]1989[illegible]Y[illegible]ZFY[illegible]

[illegible]ZFY[illegible]Y[illegible]DNA[illegible] ZFY[illegible]

[illegible]ZFY[illegible]1989[illegible]ZFY[illegible]SRY[illegible] SRY[illegible]

[illegible]Y[illegible]SRY[illegible]SRY[illegible]SRY[illegible]

[illegible]SRY[illegible]“[illegible]”[illegible]·[illegible]—[illegible]Robin Lovell-Badge[illegible]SRY[illegible]XX[illegible]

※※※

[illegible]Y[illegible]Y[illegible]“[illegible]……[illegible]‘[illegible]’[illegible]”

[illegible]“[illegible]”[illegible]SRY[illegible][2]

※※※

[illegible]·[illegible]David Reimer[illegible]Winnipeg[illegible]2004[illegible]5[illegible]5[illegible]38[illegible]1965[illegible]·[illegible]Bruce Reimer[illegible]

[illegible]·[illegible]·[illegible]John Money[illegible]“[illegible]”[illegible]Brenda[illegible]

[illegible]·[illegible]20[illegible]60[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”

[illegible]4[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]14[illegible]“[illegible]”[illegible]1990[illegible]2004[illegible]

[illegible]·[illegible]20[illegible]70[illegible]80[illegible]C[illegible]C[illegible]“[illegible]”[illegible]C[illegible]“[illegible]”[illegible]20[illegible]40[illegible]C[illegible]C[illegible]“[illegible]”[illegible]20[illegible]C[illegible]C[illegible]“[illegible]”[illegible]

[illegible]C[illegible]48[illegible]XY[illegible]C[illegible]6[illegible]“[illegible]”[illegible]C[illegible]

C[illegible]·[illegible]C[illegible]48[illegible]C[illegible]C[illegible]

2005[illegible]“[illegible]”[illegible]XY[illegible]“[illegible]”[illegible]·[illegible]C[illegible]“[illegible]”[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

※※※

[illegible]·[illegible]Otto Weininger[illegible]“[illegible]……[illegible]……[illegible]”

[illegible]SRY[illegible]/[illegible]SRY[illegible]SRY[illegible]

[illegible]SRY[illegible]SRY[illegible]SRY[illegible]

※※※

[illegible]—[illegible]TGY[illegible]SRY[illegible]TGY[illegible]SRY[illegible]

“ ”

※※※

SRY

— —

[1] XY “ ” “ ” “ ” “ ” “ ” “ ” “ ” XY Y XY

[illegible]XY[illegible]XY[illegible]Y[illegible]Y[illegible]Y[illegible]SRY[illegible]Y[illegible]X[illegible]XO[illegible]Y[illegible]

[2] [illegible]intersexuality[illegible]SRY[illegible]

[illegible]
[illegible]

[illegible]

——[illegible]·[illegible]William Wright[illegible]
[illegible]Born That Way[illegible]

[illegible]20[illegible]50[illegible]60[illegible]“[illegible]”[illegible]“[illegible]”[illegible]1956[illegible]·[illegible]Sándor Lorand[illegible]“[illegible]”20[illegible]60[illegible]“[illegible]”

[illegible]·[illegible]Irving Bieber[illegible]1962[illegible]1973[illegible]“[illegible]”[illegible]20[illegible]80[illegible]1992[illegible]·[illegible]Dan Quayle[illegible]“[illegible]……[illegible]”

1993[illegible]7[illegible]10[illegible]·[illegible]Carol Sarler[illegible]“[illegible]”

“[illegible]”[illegible]

※※※

[illegible]·[illegible]Dean Hamer[illegible]MT[illegible]

1991[illegible]10[illegible]“[illegible]10[illegible]”

[illegible]1871[illegible]Descent of Man[illegible]

[illegible]“[illegible]”[illegible]

[illegible]1984[illegible]·[illegible]Richard Lewontin[illegible]Not in Our Genes:Biology, Ideology and Human Nature[illegible]“[illegible]……[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]1966[illegible]14[illegible]“[illegible]”[illegible]“[illegible]”[illegible]654[illegible]

[illegible]20[illegible]80[illegible]J.[illegible]·[illegible]J. MichaelBailey[illegible]110[illegible]1978[illegible]

[illegible]56[illegible]52%[illegible][1][illegible]54[illegible]22%[illegible]10%[illegible]1971[illegible]

[illegible]48%[illegible]“[illegible]”[illegible]1[illegible]30%[illegible]55%[illegible]

[illegible]20[illegible]60[illegible]“[illegible]”[illegible]“[illegible]”[illegible]1[illegible]

[illegible]“[illegible]”[illegible]

※※※

1991[illegible]10[illegible]20[illegible]80[illegible]10[illegible]

[illegible]20[illegible]80[illegible]1991[illegible]7.5[illegible]

1991[illegible]#92—C—0078[illegible]1992[illegible]114[illegible]45[illegible]

[illegible]1992[illegible]1 000[illegible]114[illegible]6[illegible]20%[illegible]10%[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

[illegible]X[illegible]X[illegible]X[illegible]X[illegible]X[illegible]DNA[illegible]

[illegible]X[illegible]40[illegible]X[illegible]40[illegible]DNA[illegible]X[illegible]22[illegible]33[illegible]Xq28[illegible]20[illegible]13[illegible]Xq28[illegible]

※※※

Xq28[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]
Xq28[illegible]Xq28[illegible]“[illegible]”[illegible]
[illegible]Xq28[illegible]
[illegible]Xq28[illegible]“[illegible]
[illegible]”[illegible]
[illegible]
[illegible]Xq28[illegible]

※※※

1993[illegible]1995[illegible]
[illegible]1999[illegible]
[illegible]Xq28[illegible]2005[illegible]456[illegible]
[illegible]
Xq28[illegible]Xq28[illegible]7[illegible]8[illegible]10[illegible]2015
[illegible]409[illegible]Xq28[illegible]
[illegible]8[illegible]

[illegible]
[illegible]10[illegible]
[illegible]“[illegible]”[illegible]“[illegible]”[illegible]
[illegible]Xq28[illegible]
[illegible]
[illegible]

[illegible]“[illegible]”[illegible]DNA[illegible]
[illegible]DNA[illegible]
[illegible]
[illegible]Xq28[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

※※※

[illegible]20[illegible]1971[illegible]·[illegible]Macfarlane Burnet[illegible]Genes, Dreams and Realities[illegible]“[illegible]”[illegible]70[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]Nancy Segal[illegible]“[illegible]……[illegible]20[illegible]30[illegible]70[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]20[illegible]70[illegible]“[illegible]”[illegible]

[illegible]·[illegible]

[illegible]

※※※

1979[illegible]2[illegible]·[illegible]Thomas Bouchard[illegible]30[illegible]

1979[illegible]20[illegible]80[illegible]

[illegible]“MISTRA”[illegible]1990[illegible][2][illegible]56[illegible]30[illegible]331[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]11[illegible]0.96[illegible]1[illegible]0.70[illegible]0.50[illegible]0.60[illegible]0.60[illegible]0.70[illegible]0.50[illegible]1[illegible]0.35[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]·[illegible]Daphne Goodship[illegible]·[illegible]Barbara Herbert[illegible]

1939 …… 20 …… 50 ……

…… “……” …… 5 …… 3 ……

…… 37 …… 80 …… “…… …… …… …… ……·…… James Allan ……·…… James Alan …… ……”……

……

…… squidging …… “……”……

…… 20 …… 20 ……

[illegible]

※※※

20[illegible]90[illegible]·[illegible]Richard Ebstein[illegible]·[illegible]
[illegible]“[illegible]”[illegible]

[illegible]20[illegible]80[illegible]100[illegible]50%[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]·[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]·[illegible]

[illegible]3[illegible]124[illegible]D4DR[illegible]

[illegible]“[illegible]”[illegible]

D4DR[illegible]“[illegible]”[illegible]D4DR——7[illegible]7[illegible]DNA[illegible]

[illegible]D4DR[illegible]“[illegible]”[illegible]D4DR[illegible]D4DR——7[illegible]D4DR[illegible]D4DR[illegible]D4DR[illegible]“[illegible]”[illegible]

[illegible]D4DR[illegible]50[illegible]D4DR[illegible]D4DR[illegible]D4DR[illegible]5%[illegible]10[illegible]

※※※

[illegible]

[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

※※※

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]20[illegible]80[illegible]

[illegible]

20[illegible]80[illegible]30[illegible]

[illegible]20[illegible]43[illegible]“[illegible]”[illegible][3][illegible]

[illegible]“[illegible]”[illegible]

[illegible]jaal[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[1] [illegible]

[2] [illegible]1984[illegible]1987[illegible]

[3] [illegible]·[illegible]·[illegible]Alexander van Oudenaarden[illegible]·[illegible]skn—1[illegible]“[illegible]”[illegible]skn—1[illegible]·[illegible]end—1[illegible]RNA[illegible]end—1[illegible]end—1[illegible]

□□□□□□·□□□Arjun Raj□□□□□□□□□□□□□□□□□□□□□□□Variability in Gene Expression Underlies Incomplete Penetrance□□□□□2010□□□□□□□□□463□7283□□913—918□□

[illegible]
[illegible]

[illegible]100%[illegible]

——[illegible]·[illegible]Nessa Carey[illegible]
[illegible]The Epigenetics Revolutiom[illegible]

[illegible]20[illegible]

——[illegible]·[illegible]·[illegible]
[illegible]An Anthropology of Biomedicine[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]20[illegible]50[illegible]30[illegible]ZENK[illegible]ZENK[illegible]

[illegible]

※※※

[illegible]20[illegible]50[illegible]·[illegible]Conrad Waddington[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[1][illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

※※※

[illegible]1944[illegible]9[illegible]“[illegible]”[illegible]

[illegible]1944[illegible]12[illegible]400[illegible]3[illegible]“[illegible]”[illegible]“[illegible]”[illegible]Hunger Winter[illegible]“[illegible]Honger winter[illegible]”[illegible]

[illegible]1945[illegible]·[illegible]

[illegible]20[illegible]80[illegible]
[illegible]
[illegible]
[illegible]
[illegible]20[illegible]90[illegible]
[illegible]
[illegible]
[illegible][2]

※※※

[illegible]“[illegible]”[illegible]
[illegible]1975[illegible]
[illegible]“[illegible]”[illegible]
[illegible]“[illegible]”[illegible]
[illegible]“[illegible]”[illegible]
[illegible]
[illegible]

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]·[illegible]
[illegible]·[illegible]
[illegible]“[illegible]”[illegible]

[illegible]
[illegible]“[illegible]”[illegible]“[illegible]”[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

[illegible]
[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

※※※

[illegible]20[illegible]50[illegible]1961[illegible]20[illegible]6[illegible]

1958[illegible]·[illegible]John Gurdon[illegible]250[illegible]“[illegible]”[illegible]20[illegible]50[illegible]“[illegible]”[illegible]

[illegible]1961[illegible]

[illegible]

[illegible]18[illegible]18[illegible]18[illegible]Doppelgänger[illegible]

[illegible]·[illegible]·[illegible]2012[illegible][3]

[illegible]DNA[illegible]

[illegible]

※※※

[illegible]
1961[illegible]·[illegible]Mary Lyon[illegible]·[illegible]20[illegible]

[illegible]X[illegible]X[illegible]DNA[illegible]RNA[illegible]“[illegible]”[illegible]X[illegible]X[illegible]X[illegible]X[illegible]X[illegible]X[illegible]X[illegible]“[illegible]”[illegible]

[illegible]X[illegible]X[illegible]X[illegible]
X[illegible]X[illegible]

[illegible]X[illegible]X[illegible]X[illegible]

[illegible]“[illegible]”[illegible]20[illegible]70[illegible]DNA[illegible]“[illegible]”[illegible]

20[illegible]70[illegible]DNA[illegible]XIST[illegible]RNA[illegible]RNA[illegible]“[illegible]”[illegible]

※※※

[illegible]DNA[illegible]·[illegible]David Allis[illegible]1996[illegible][4][illegible]histone[illegible]

[illegible]DNA[illegible]“[illegible]”[illegible]

※※※

[illegible][5][illegible][6][illegible]“[illegible]”[illegible]“[illegible]”[illegible]

…This…is…the…… , , ,……struc…ture , ……of… Your…… Gen…ome…

[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]50[illegible]10[illegible]10[illegible]50[illegible][7]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible][8][illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]·[illegible]·[illegible]Jorge Luis Borges[illegible]Funes the Memorious[illegible]“[illegible]”[illegible]

※※※

2006

RNA“”

“”

c——myc
myc

myc

※※※

1945

DNA

DNA [9]

※※※

“”

20

“”

Menelaus

※※※

[illegible]

[illegible]DNA[illegible]

[illegible]

※※※

[illegible]“[illegible]”[illegible]

[illegible]

[illegible]“[illegible]”[illegible]20[illegible]50[illegible]20[illegible]60[illegible]1980[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

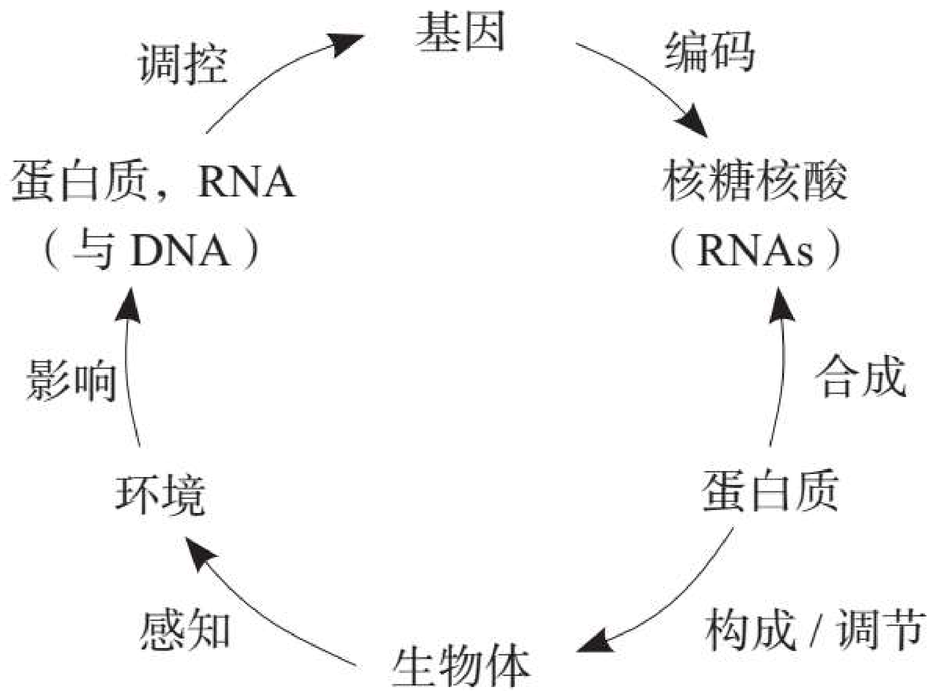
※※※

[illegible] engine [illegible] ingenium [illegible] ingenuity [illegible] computer [illegible] computare [illegible] reckoning together [illegible]

[illegible]·[illegible] James Gleick [illegible]“[illegible]”[illegible]

※※※

[illegible]



[illegible]RNA[illegible]DNA[illegible]RNA[illegible]

[illegible]

※※※

[illegible]·[illegible]Jack Szostak[illegible]20[illegible]

[illegible]·[illegible]Stanley Miller[illegible]“[illegible]”[illegible]20[illegible]50[illegible]

[illegible]

[illegible]3[illegible]RNA[illegible]DNA[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]A[illegible]C[illegible]G[illegible]U[illegible]RNA[illegible]RNA[illegible]RNA[illegible]RNA[illegible]RNA[illegible]DNA[illegible]RNA[illegible]RNA[illegible]

[illegible]RNA[illegible]RNA[illegible]RNA[illegible]RNA[illegible]RNA[illegible]RNA—[illegible]RNA—[illegible]

[illegible]“[illegible]protocell[illegible]RNA[illegible]”[illegible]RNA[illegible]

※※※

[illegible]“[illegible]”[illegible]RNA[illegible]“[illegible]”[illegible]RNA[illegible]

[illegible]

[illegible]DNA[illegible]DNA[illegible]RNA[illegible]RNA[illegible][10][illegible]Cronus[illegible]Zeus[illegible]

[1] [illegible]epigenesis[illegible] (“[illegible]”[illegible]“[illegible]”[illegible]DNA[illegible]DNA[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[2] [illegible]“[illegible]”[illegible]

[3] [illegible]2009[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]2015[illegible]“[illegible]”[illegible]

[4] [illegible]·[illegible]Vincent Allfrey[illegible]20[illegible]60[illegible]“[illegible]”30[illegible]

[5] [illegible]“[illegible]”[illegible]

[6] [illegible]·[illegible]Tim Bestor[illegible]DNA[illegible]X[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[7] [illegible]

[8] [illegible]·[illegible]

[9] [illegible]RNA[illegible]

[10] [illegible]RNA[illegible]

□□□□

□□□□□□
□□□□□□□□□□2015– □

□□□□□□□□□□□□□□□□□□□□□

——□□·□□□Karl Popper□

□□□□□□□□□□□□□

——□□·□□□□□Tom Stoppard□□
□□□□□□□□The Coast of Utopia□

[illegible]
[illegible]

[illegible]DNA[illegible]

——[illegible]·[illegible]Gina Smith[illegible]
[illegible]The Genomics Age[illegible]

[illegible]

——T. S.[illegible]T. S. Eliot[illegible]
[illegible]Murder in the Cathedral[illegible]

[illegible]1972[illegible]·[illegible]DNA[illegible]“[illegible]DNA”[illegible]DNA[illegible]“[illegible]”

[illegible]“[illegible]”[illegible]1974[illegible]DNA[illegible]3[illegible]SV40[illegible]“[illegible]”[illegible]chimera[illegible]

[illegible]“[illegible]”[illegible]

[illegible]RNA[illegible]

[illegible]

※※※

[illegible]10[illegible]

[illegible]embryonic stem cells , ES[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

[illegible]20[illegible]80[illegible]·[illegible]Martin Evans[illegible]“[illegible]”

[illegible]DNA[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

[illegible]30[illegible]DNA[illegible]5[illegible]10[illegible]HIV[illegible]
SV40[illegible]

[illegible]

[illegible]X[illegible]X[illegible]·[illegible]“[illegible]”[illegible]

[illegible]20[illegible]90[illegible]

2014

20 90 “ ” · Rudolf Jaenisch “ …… ”

※※※

· Ashanti DeSilva North Olmsted 1988 Ashi

3 Adenosine Deaminase ADA 20

[illegible] 4 [illegible] “[illegible]”

ADA [illegible] ADA [illegible] T [illegible] T [illegible] ADA [illegible] ADA [illegible] SCID [illegible] SCID [illegible]·[illegible] David Vetter [illegible] 12 [illegible] 1984 [illegible] “[illegible]” [illegible]

[illegible] ADA [illegible]·[illegible] PEG—ADA [illegible] 20 [illegible] 80 [illegible] ADA [illegible] ADA [illegible] PEG—ADA [illegible] ADA [illegible] PEG—ADA [illegible] ADA [illegible]

[illegible] ADA [illegible]·[illegible] Richard Mulligan [illegible] HIV [illegible]

※※※

1986 [illegible]·[illegible]·[illegible] William French Anderson [illegible]·[illegible] Michael Blaese [illegible][1] [illegible] ADA [illegible] ADA [illegible][2] [illegible] ADA [illegible] 20 [illegible] 80 [illegible] ADA [illegible] ADA [illegible] ADA [illegible] T [illegible]

[illegible]ADA[illegible]“[illegible]”[illegible]“[illegible]……[illegible]”1987[illegible]4[illegible]24[illegible]ADA[illegible]ADA[illegible]B[illegible]T[illegible]ADA[illegible]T[illegible]ADA[illegible]

[illegible]DNA[illegible]Recombinant DNA Advisory Committee , RAC[illegible]DNA[illegible]“[illegible]”[illegible]RAC[illegible]

[illegible]RAC[illegible]

[illegible]ADA[illegible]ADA[illegible]T[illegible]T[illegible]ADA[illegible]T[illegible]

[illegible]1990[illegible]T[illegible]1990[illegible]·[illegible]Gerard McGarrity[illegible]“[illegible]”[illegible]

[illegible]ADA[illegible]ADA[illegible]·[illegible]Cynthia Cutshall[illegible]4[illegible]·[illegible]

※※※

1990[illegible]9[illegible]·[illegible]Raja DeSilva[illegible]·[illegible]Van DeSilva[illegible]4[illegible]

[illegible]4[illegible]T[illegible]T[illegible]10[illegible]·[illegible]25[illegible]

1990[illegible]9[illegible]14[illegible]T[illegible]

[illegible]12[illegible]52[illegible]10[illegible]T[illegible]ADA[illegible]28[illegible]25[illegible]“[illegible]”[illegible]M&M[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]T[illegible]ADA[illegible]·[illegible]·[illegible]T[illegible]PEG—ADA[illegible]

[illegible]·[illegible]“[illegible]……[illegible]”[illegible]·[illegible]“[illegible]PEG[illegible]PEG—ADA[illegible]12[illegible]”

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]T[illegible]

※※※

1999[illegible]9[illegible]9[illegible]·[illegible]T[illegible]9[illegible]·[illegible]Jesse Gelsinger[illegible]18[illegible]·[illegible]·[illegible]OTC[illegible]ornithine transcarbamylase[illegible]

[illegible]
OTC[illegible]

[illegible]OTC[illegible]OTC[illegible]OTC[illegible]32[illegible]4[illegible]

[illegible]·[illegible]Mark Batshaw[illegible]·[illegible]James Wilson[illegible]1993[illegible]12[illegible]OTC[illegible]Genova[illegible]Human Gene Therapy at the University ofPennsylvania[illegible]OTC[illegible]ADA[illegible]OTC[illegible]OTC[illegible]OTC[illegible]

[illegible]OTC[illegible]“[illegible]”[illegible]10[illegible]

1993[illegible]OTC[illegible]1997[illegible]RAC[illegible]

□□□□□□□□□□□□RAC□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ADA
□□□□□□□□□10□□□□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□RAC□□□□□□□RAC□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□OTC□□□□□□□□□□□□□□“□□”□□□□□□□□□□□□□□□□
□□·□□□□□□□□
OTC□□□□□□□□□□□□□□

※※※

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□□□□□□□□”□□
□□□□□□□□□□□□□□□□□□□□□□□“□□□□□”□□□□□□□□□□□□□□□1998□
□□□□□□□□□□17□□□□□□□□□□□□□□□□□OTC□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□”

□□□□□□□□□□□□□□□□□□□□□□□□□□□□1999□6□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□OTC□□□□□□□□□□□□□□□□·□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□□□□□·□□□□□OTC□□□□□□□“□□□□”□□
□□Spectrum
Arena□□□□□·□□□□□Rocky Balboa□□□□□□□□□□□□□□□□□□□□□□□□
□□

1999□9□9□□
□□□OTC□□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

※※※

1999□9□13□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□70 μmol/L□
□□
□□
□□
□□□□□□□□□□□□□□□□□□□17□□□□□□□□□□□9□□□□□□□□□□□□□□□□□
□□□11□
□□□□□□□□30□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□OTC□
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

[illegible]40[illegible]“[illegible]”[illegible]

[illegible]OTC[illegible]393 μmol/L[illegible]10[illegible]·[illegible]·[illegible]·[illegible]

[illegible]8[illegible]·[illegible]

[illegible]·[illegible]1.5[illegible]

9[illegible]17[illegible]·[illegible]2[illegible]30[illegible]

“[illegible]”2014[illegible]·[illegible]

[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”

※※※

[illegible]1999[illegible]10[illegible]OTC[illegible]10[illegible]11[illegible]·[illegible]12[illegible]RAC[illegible]FDA[illegible]

[illegible]·[illegible]“[illegible]”[illegible]OTC[illegible]

[illegible]OTC[illegible]·[illegible]17[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

[illegible]OTC[illegible]2000[illegible]1[illegible]FDA[illegible]28[illegible]FDA[illegible]“[illegible]”[illegible]“FDA[illegible]5[illegible]1999[illegible]9[illegible]2000[illegible]”[illegible]·[illegible]Ruth Macklin[illegible]“[illegible]”

[illegible]OTC[illegible]OTC[illegible]

[illegible]“[illegible]”[illegible]10[illegible]

[1] [illegible]·[illegible]Kenneth Culver[illegible]

[2] 1980[illegible]·[illegible]Martin Cline[illegible]β—[illegible]DNA[illegible]

[illegible]
[illegible]“[illegible]”

[illegible]

——[illegible]·[illegible]·[illegible]
[illegible]Byzantium[illegible]

[illegible]DNA[illegible]DNA[illegible]
DNA[illegible]

——[illegible]·[illegible]George Church[illegible]

[illegible]20[illegible]90[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]10[illegible]“[illegible]”[illegible]·[illegible]Eric Topol[illegible]“[illegible]‘[illegible]’[illegible]”

※※※

[illegible]“[illegible]”[illegible]BRCA1[illegible]20[illegible]70[illegible]—[illegible]·[illegible]Mary-Claire King[illegible]·[illegible]90%[illegible]

[illegible]

1978[illegible]“[illegible]”[illegible]1978[illegible]1988[illegible]150[illegible]30[illegible]

[illegible]10[illegible]“[illegible]”[illegible]

[illegible]17[illegible]1988[illegible]17[illegible]17q21[illegible]“[illegible]”[illegible]“[illegible]……[illegible]”[illegible]BRCA1[illegible]

[illegible]BRCA1[illegible]20[illegible]90[illegible]BRCA1[illegible]1994[illegible]Myriad Genetics[illegible]BRCA1[illegible]1998[illegible]BRCA1[illegible]

[illegible]BRCA1[illegible]1996[illegible]BRCA1[illegible]PCR[illegible]BRCA1[illegible]“[illegible]”“[illegible]”[illegible]“[illegible]”[illegible]

※※※

2008[illegible]·[illegible]Jane Sterling[illegible]37[illegible]—[illegible]·[illegible]45[illegible]60[illegible]BRCA1[illegible]10[illegible]

[illegible]BRCA1[illegible]BRCA1[illegible]80%[illegible]BRCA1[illegible]30[illegible]50[illegible]75[illegible]

[illegible]“[illegible]BRCA1[illegible]”[illegible]BRCA1[illegible]

[illegible]BRCA1[illegible]“[illegible]”[illegible]X[illegible]

[illegible]BRCA1[illegible]DNA[illegible]DNA[illegible]DNA[illegible]BRCA1[illegible]BRCA1[illegible]BRCA1[illegible]DNA[illegible]BRCA1[illegible]X[illegible]DNA[illegible]BRCA1[illegible]DNA[illegible]BRCA1[illegible]BRCA1[illegible]

[illegible]BRCA1[illegible]BRCA1[illegible]
[illegible]orwellian ring[illegible]previvor[illegible]

※※※

[illegible]1908[illegible]·[illegible]Eugen Bleuler[illegible]“[illegible]”[illegible]dementia praecox[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]schizo-phrenia[illegible]

[illegible]

[illegible]20[illegible]70[illegible]30%[illegible]50%[illegible]10%[illegible]20%[illegible]80%[illegible]

[illegible]20[illegible]70[illegible]“[illegible]”[illegible]1974[illegible]·[illegible]Silvano Arieti[illegible]“[illegible]”[illegible]

[illegible]

[illegible]20[illegible]80[illegible]

[illegible]20[illegible]90[illegible]DNA[illegible]DNA[illegible]DNA[illegible]“[illegible]”[illegible]

[illegible]

[illegible]2013[illegible]623[illegible][1]

[illegible]617[illegible]80%[illegible][2][illegible][3]

※※※

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]108[illegible][4][illegible]BRCA1[illegible]BRCA1[illegible]70%[illegible]80%[illegible]“[illegible]……”[illegible]“[illegible]”[illegible][5]

※※※

[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]‘[illegible]’[illegible]”[illegible]“[illegible]”

※※※

1946

21 16 13

11

abhed

[illegible]

[illegible]Touched with Fire[illegible]·[illegible]·[illegible]Kay Redfield Jamison[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]van Gogh[illegible]·[illegible]Virginia Woolf[illegible]·[illegible]Sylvia Plath[illegible]·[illegible]Anne Sexton[illegible]·[illegible]Robert Lowell[illegible]·[illegible]Jack Kerouac[illegible]·[illegible]·[illegible]·[illegible]·[illegible]Hans Asperger[illegible]“[illegible]”[illegible]“[illegible]”[illegible]Satie[illegible]Gymnopédies[illegible]7[illegible]18[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]·[illegible]

[illegible]

[illegible]

[illegible]

[illegible]·[illegible]Edvard Munch[illegible]“[illegible]”[illegible]“[illegible]”[illegible]20[illegible]

[illegible]“[illegible]”[illegible]·[illegible]“[illegible]”[illegible]

※※※

2013[illegible]Scripps Institute[illegible]“[illegible]”[illegible]·[illegible]David Goldstein[illegible]“[illegible]”[illegible]·[illegible]Stephen Quake[illegible]“[illegible]”[illegible]DNA[illegible]

[illegible]15[illegible]1[illegible]4[illegible]

[illegible]2011[illegible]6[illegible]·[illegible]Alexis Beery[illegible]·[illegible]Noah Beery[illegible]5—[illegible]5—HT[illegible]

[illegible]2012[illegible]2012[illegible]ADCY5[illegible]DOCK3[illegible]

[illegible]

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]2012[illegible]18[illegible]

[illegible]·[illegible]“[illegible]”[illegible]

[illegible]

[illegible]·[illegible]“[illegible]”

[illegible]

※※※

[illegible]·[illegible]BRCA1[illegible]70%[illegible]80%[illegible]

[illegible]100%[illegible]

[illegible]

[illegible]2015[illegible]15[illegible]“[illegible]”[illegible]B2[illegible]

[illegible]“[illegible]”[illegible][6][illegible]GATTACA[illegible]Jerome[illegible]“[illegible]”[illegible]

※※※

[illegible]

[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]MECP2[illegible]DNA[illegible]

[illegible]—[illegible]

[illegible]“[illegible]”[illegible]—[illegible][7][illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]2020[illegible]“[illegible]”[illegible]

※※※

1990[illegible]4[illegible]

[illegible]IVF[illegible]in vitro fertilization[illegible]8[illegible]16[illegible]salamander[illegible]

[illegible]

[illegible]PGD[illegible]Preimplantation Genetic Diagnosis[illegible]PGD[illegible]“[illegible]”[illegible]PGD[illegible]

1989[illegible]PGD[illegible]X—[illegible]X-linked mental retardation[illegible]X—[illegible]X-linked immunological syndrome[illegible]

PGD[illegible]PGD[illegible]1995[illegible]PGD[illegible]“[illegible]”[illegible]PGD[illegible]“[illegible]”[illegible]20[illegible]30[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]PGD[illegible]—[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]BRCA1[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]·[illegible]Desmond King[illegible]“[illegible]‘[illegible]’[illegible]——[illegible]‘[illegible]’[illegible]”

※※※

[illegible]—[illegible]“[illegible]”[illegible]BRCA1[illegible]

[illegible]12%[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]20[illegible]90[illegible]5HTTLPR[illegible]5HTTLPR[illegible]40%[illegible]5HTTLPR[illegible]
5HTTLPR/short[illegible]5HTTLPR/short[illegible]
5HTTLPR/short[illegible]
[illegible]PTSD[illegible]

2010[illegible]“[illegible]”[illegible]SAAF,
Strong African American Families[illegible]

□□□□□□600□□7□□□5HTTLPR□□□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□5HTTLPR/short□□“□□”□□□“□□□”□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□5HTTLPR/short□□

□□□□□□□□□5HTTLPR/short□□□□□□□□□□□□□“□□□□□”□□□

□□“□□□□□”□□□□□□□□□□□□□□□2014□□□□□□□□□□·□□□□□Jay Belsky□□□□□□□□□□□□□□□□“□□”□□□□□□□“□□”□□□□□□□□□□□□□□□□□□□□□□□“□□□□□”□“□□□”□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□”

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□“□□□”□□“□□”□□“□□□□”□□□□□□□“□□”□□□□□□□□□□

□□□□□□□□□□□□□□□□□□□□□“□□”□□

※※※

[illegible]60[illegible]13%[illegible]30%[illegible]50%[illegible]3[illegible]5[illegible]10[illegible]

[illegible]2020[illegible]

[illegible]20[illegible]“[illegible]”[illegible]1975[illegible]·[illegible]Michel Foucault[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[1] [illegible]

[2] [illegible]CNV, copy number variation[illegible]

[3] 21[illegible]Simons Simplex Collection[illegible]SSC[illegible]2 800[illegible]

[4] [illegible]15[illegible]C4[illegible]C4A[illegible]C4B[illegible]C4A[illegible]C4B[illegible]2016[illegible]1[illegible]“[illegible]”[illegible]C4[illegible]“[illegible]”[illegible]C4[illegible]C4A[illegible]C4B[illegible]“[illegible]”[illegible]20[illegible]70[illegible]80[illegible]90[illegible]21[illegible]40[illegible]C4[illegible]

[5] [illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[6] [illegible]——[illegible]

[7] [illegible]

[illegible]
[illegible]

[illegible]

——[illegible]·[illegible]
[illegible]

[illegible]20[illegible]……[illegible]20[illegible]
21[illegible]

——[illegible]
[illegible]Biology’s Big Bang[illegible]2007[illegible]

1991[illegible]·[illegible]

[illegible]“[illegible]……[illegible]……‘[illegible]’”

“[illegible]”[illegible]“[illegible]”

[illegible]20[illegible]80[illegible]“[illegible]”[illegible]—[illegible]20[illegible]90[illegible]

20[illegible]90[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]·[illegible]·[illegible]·[illegible]

[illegible]

[illegible]20[illegible]90[illegible]·[illegible]“[illegible]”[illegible]

[illegible]1990[illegible]2000[illegible]10[illegible]“[illegible]”[illegible]·[illegible]

※※※

[illegible]20[illegible]

2014[illegible]New England Journal of Medicine[illegible]DNA[illegible]1904[illegible]20[illegible]X[illegible]1984[illegible]Ⅷ[illegible]

20[illegible]80[illegible]21[illegible]20[illegible]A[illegible]B[illegible]B[illegible]IX[illegible]

[illegible]10[illegible]B[illegible]IX[illegible]10[illegible]IX[illegible]IX[illegible]5%[illegible]90%[illegible]IX[illegible]3[illegible]

[illegible]IX[illegible]5%[illegible]5%[illegible]95%[illegible]

※※※

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]20[illegible]90[illegible]

[illegible]

[illegible]

[illegible]·[illegible]James Thomson[illegible]20[illegible]90[illegible]20[illegible]70[illegible]20[illegible]80[illegible]“[illegible]”[illegible]

1991[illegible]1996[illegible]

[illegible]20[illegible]90[illegible]10[illegible]12[illegible]

[illegible]3[illegible]“[illegible]”[illegible]1996[illegible]36[illegible]14[illegible]“[illegible]”[illegible]

[illegible]

[illegible]1998[illegible]

[illegible]2001[illegible]3[illegible]·[illegible]·[illegible]George W. Bush[illegible]74[illegible]2006[illegible]2007[illegible]“[illegible]”[illegible]

※※※

[illegible]

[illegible]20[illegible]80[illegible]DNA[illegible]DNA[illegible]DNA[illegible]

※※※

2011[illegible]·[illegible]Jennifer Doudna[illegible]·[illegible]Emmanuelle Charpentier[illegible]“[illegible]”

2005[illegible]·[illegible]Philippe Horvath[illegible]·[illegible]Rodolphe Barrangou[illegible]Danisco[illegible]DNA[illegible]DNA[illegible]

[illegible]“[illegible]”[illegible]RNA[illegible]DNA[illegible]“[illegible]”RNA[illegible]DNA[illegible]DNA[illegible]

[illegible]“[illegible]”[illegible]DNA[illegible]Cas9[illegible]“[illegible]”[illegible]“[illegible]”[illegible]DNA[illegible]Cas9[illegible]

[illegible]RNA[illegible]“[illegible]”[illegible]

2012[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]“[illegible]”[illegible]X[illegible]—[illegible][1]

[illegible]DNA[illegible]DNA[illegible]DNA[illegible]

DNA[illegible]
ATGGGCCCG[illegible]ACCGCCGGG[illegible]BRCA1[illegible]
[illegible]genome editing[illegible]genomic surgery[illegible]

2012[illegible]CRISPR/Cas9[illegible]3[illegible]CRISPR[illegible]“[illegible]”[illegible]RNA[illegible]·[illegible]“[illegible]”[illegible]

※※※

[illegible]

[illegible]

[illegible]

[illegible]

[illegible][2][illegible]

※※※

[illegible]CRISPR[illegible]2014[illegible]2013[illegible]

[illegible]

※※※

[illegible]20[illegible]80[illegible]90[illegible]DNA[illegible]

1939[illegible]·[illegible]1972[illegible]·[illegible]DNA[illegible]

[illegible]a[illegible]b[illegible]

[illegible]c[illegible]d[illegible]……[illegible]

[illegible]

[illegible]2009[illegible]“[illegible]”[illegible]

※※※

2015[illegible]·[illegible]·[illegible]“[illegible]‘[illegible]’[illegible]—[illegible]……”

[illegible]·[illegible]George Daley[illegible]“[illegible]”

[illegible]·[illegible]“[illegible]”

[illegible]“[illegible]”[illegible]PGD[illegible]

[illegible]

[illegible]CRISPR/Cas9[illegible]“[illegible]‘[illegible]’[illegible]”[illegible]·[illegible]“[illegible]‘[illegible]’[illegible]”

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

2015[illegible]86[illegible]CRISPR/Cas9[illegible]71[illegible]54[illegible]4[illegible]

[illegible]Protein+Cell[illegible]

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”2015[illegible]6[illegible]“[illegible]‘[illegible]’[illegible]14[illegible]”

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

※※※

[illegible]·[illegible]Tony Judt[illegible]·[illegible]Albert Camus[illegible]The Plague[illegible]

[illegible]

1.[illegible]

2.[illegible]

3.[illegible]

4.[illegible]“[illegible]”[illegible]“[illegible]”[illegible]6[illegible]4[illegible]99.688%[illegible]

5.[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]Narcissus[illegible]

6.[illegible]**“**[illegible]**”**[illegible]**“**[illegible]**”**[illegible]SRY[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

7.[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

8.[illegible]10 000[illegible]

9.[illegible]**“**[illegible]**”**[illegible]

10. [illegible]

11. [illegible]“[illegible]—[illegible]”[illegible]

12. [illegible]“[illegible]”[illegible]“[illegible]”[illegible]

13. [illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]21 000[illegible]

[illegible]

[1] [illegible]“[illegible]”[illegible]DNA[illegible]
TALEN[illegible]

[2] [illegible]

[illegible]
[illegible]

Sura-na Bheda Pramaana Sunaavo;

Bheda, Abheda, Pratham kara Jaano.

[illegible]

[illegible]

[illegible]

[illegible]

——[illegible]

[illegible]Abhed[illegible]“[illegible]”[illegible]Bhed[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]Bhed[illegible]vidya[illegible]ved[illegible]“[illegible]”[illegible]Vedas[illegible]uied[illegible],[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]—[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

※※※

[illegible]30[illegible]“[illegible]”[illegible]21 000[illegible]24 000[illegible]DNA[illegible]RNA[illegible]“[illegible]”DNA[illegible]

2013[illegible]DNA[illegible]“DNA[illegible]”[illegible]Encyclopedia of DNA Elements[illegible]ENC-O-DE[illegible]

[illegible]“[illegible]”[illegible][1][illegible]·[illegible]“[illegible]”[illegible]

[illegible]

[illegible]2011[illegible]·[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]10[illegible]10[illegible]“[illegible]”[illegible]“[illegible]”[illegible]10[illegible]

[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

※※※

[illegible]

[illegible]“[illegible]”[illegible]30[illegible]DNA[illegible]66[illegible]2010[illegible]2014[illegible]

[illegible]2015[illegible]CRISPR[illegible]6[illegible]14[illegible]14[illegible]

[illegible]“[illegible]”[illegible]“[illegible]”[illegible]

[illegible]

[illegible]

[illegible]

[illegible]“[illegible]”[illegible]c—PGD[illegible][2]

[illegible]“[illegible]”[illegible]

[illegible]ADA[illegible]“[illegible]”[illegible]

2015[illegible]·[illegible]Richard Friedman[illegible]“[illegible]post-traumatic stress disorder, PTSD[illegible]……[illegible]”[illegible]

[illegible]“[illegible]”[illegible]

※※※

[illegible]“[illegible]”[illegible]“[illegible]”[illegible][3]

1990[illegible]·[illegible]“[illegible]”[illegible]

※※※

[illegible]6[illegible]

“[illegible]”[illegible]Ghosh[illegible]Talukdar[illegible]Mukherjee[illegible]Chatterjee[illegible]Sen[illegible]“[illegible]

[illegible]”[illegible]“[illegible]
[illegible]”[illegible]

“[illegible]
[illegible]”[illegible]
[illegible]

[illegible]
[illegible]BP[illegible]AP[illegible]
[illegible]

[illegible]18[illegible]
[illegible]

19[illegible]20[illegible]
[illegible]20[illegible]
[illegible]

[illegible]21[illegible]10[illegible]
[illegible]1919[illegible]“[illegible]
[illegible]”[illegible]

[illegible]50[illegible]100[illegible]
[illegible]“[illegible]

[illegible]”[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]DNA[illegible]

[1] [illegible]RNA[illegible]

[2] [illegible]Noninvasive Prenatal Testing , NIPT[illegible]2014[illegible]150 000[illegible]“[illegible]”[illegible]DNA[illegible]

[3] [illegible]PTSD[illegible]“[illegible]”[illegible]PTSD[illegible]“[illegible]”[illegible]

[illegible]

2010[illegible]5[illegible]Guardian First Book Prize[illegible]“[illegible]”[illegible]

[illegible]“[illegible]”[illegible]Beowulf[illegible]

[illegible]·[illegible]Sarah Sze[illegible]Leela[illegible]Aria[illegible]Sibeswar[illegible]Chandana[illegible]Ranu[illegible]Sanjay[illegible]Judy[illegible]Chia-Ming Sze[illegible]·[illegible]David Sze[illegible]·[illegible]Kathleen Donohue[illegible]

[illegible]·[illegible]“[illegible]”[illegible]

[illegible]·[illegible]Ashok Rai[illegible]·[illegible]Nell Breyer[illegible]·[illegible]Bill Helman[illegible]·[illegible]Gaurav Majumdar[illegible]·[illegible]Suman Shirodkar[illegible]·[illegible]Meru Gokhale[illegible]·[illegible]Chiki Sarkar[illegible]·[illegible]David Blistein[illegible]·[illegible]Azra Raza[illegible]·[illegible]Chetna Chopra[illegible]·[illegible]Sujoy Bhattacharyya[illegible]·[illegible]Lisa Yuskavage[illegible]·[illegible]

□Matvey Levenstein□□□□□·□□□□□Rachel Feinstein□□□□□·□□□John Currin□□□·□□□Brittany Rush□□□□□□□□□□□□□800□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□·□□□□Daniel Loedel□□□□□□□□□□□□□□□□□□□□□□□□□□□□□·□□□—□□□□Mia Crowley-Hald□□□□—□□□·□□□Anna-Sophia Watts□□□□□□□□□□□□□□□□□□□□□□□·□□□□Kate Lloyd□□□□□□□□□□□□

□□□□□□□□□□□□□□□□□□·□□□□□Gabriel Orozco□□□

□□□□□□□□□□□□□·□□□□□Nan Graham□□□□□□□□·□□□□□Stuart Williams□□□□·□□□□□Sarah Chalfant□□□□□□□□68□□□

350BC： 亚里士多德认为遗传物质以信息的形式传递。

1859： 达尔文的著作《物种起源》正式出版。

1865： 格雷戈尔·孟德尔发现了独立的遗传单元。

1869： 高尔顿在《遗传的天才》中提出了“优生学”概念。

1900—1909： 孟德尔定律被人们重新发现。植物学家威廉·约翰森创造了基因一词。

1908—1915： 摩尔根与他的学生们发现了遗传连锁与“互换”规律。

1927： 卡丽·巴克被实施了输卵管结扎绝育术。

1933—1939： 德国纳粹政府发动了一场种族卫生运动。

1934—1935： 纳粹政府起草了旨在推行种族净化的纽伦堡法案。

1941—1944： 埃弗里证明 DNA 是遗传信息携带者。

1943： 门格勒在奥斯威辛集中营对犹太双胞胎进行了惨无人道的实验。

1953： 沃森、克里克、威尔斯与富兰克林共同发现了 DNA 双螺旋结构。

1968—1973： 伯格、科恩与博耶构建出“重组 DNA”。

1975： 阿西洛马会议建议“暂停”DNA重组技术的应用。

1945—1960：研究显示，基因通过编码 RNA 来发挥作用。此外，人们还发现了基因的调控机制。

1961—1963：遗传密码被破译。

1970—1980：基因克隆与基因扩增技术问世。

1976：人们证实基因突变是致癌元凶。

1978—1988：人类疾病相关基因定位研究蓬勃兴起。

1990：人们发现 *SRY* 基因可以决定雄性性别。

1993：某些遗传学家认为存在“同性恋基因”。

1994：一项大规模遗传研究揭穿了种族观念的真相。

1998：成功分离出人类胚胎干细胞（ES）。

1999：杰西·基辛格死于基因治疗。

2000：绘制完成人类基因组序列草图。

2005—2008：人类基因组研究改变了我们对于人类起源与迁徙的理解。

2009—2013：人们发现了精神分裂症、躁郁症与自闭症基因。

2010—2015：用于“编辑”与改变人类基因组的新方法相继问世。

…

□□□

□□□□□allele□□
□□□□□□□□□□

□□□□□cascade□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□

□□□□□□□□□□central dogma, or central theory□□□□□□□□□
□□□□□□□□□DNA□□□□□□□□□RNA□□□□□RNA□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□□□□□RNA□□□□□DNA□

□□□□chromatin□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□chroma□□□□□□□□□□□□□□□□□□DNA□RNA□□□□□

□□□□chromosome□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□□

DNA□□
□□□□□□□□□□□□□A□C□T□G□□□□□□□□□□□□□□□□□□“□□”□□□□□□□□
□□□□□□□□□□□□□□□□□RNA□□□

□□enzyme□□□□□□□□□□□□□□□□□

□□□□□□epigenetics□□□□□□□□□□□□A□C□T□G□□□□□□□□□□□□□□
□□□□□□□□□DNA□□□□□□□□□□□□DNA□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□

□□□gene□□□□□□□□□□□□□□□□□□□□□□□□□RNA□□DNA□□□□□□□□□
□□□□□□□□□□RNA□□□□□□□

□□□□genome□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□DNA□□□

□□□□genotype□□□□□□□□□□□□□□□□□□□□□□“□□”□□□□□□□□□

[illegible]**mutation**[illegible]DNA[illegible]

[illegible]**nucleus**[illegible]

[illegible]**organelle**[illegible]

[illegible]**penetrance**[illegible]

[illegible]**phenotype**[illegible]

[illegible]**protein**[illegible]“[illegible]”[illegible]

[illegible]**reverse transcription**[illegible]RNA[illegible]DNA[illegible]

[illegible]**ribosome**[illegible]RNA[illegible]RNA[illegible]

RNA[illegible]“[illegible]”[illegible]RNA[illegible]A[illegible]C[illegible]G[illegible]U[illegible]RNA[illegible]DNA[illegible]RNA[illegible]RNA[illegible]**traits, dominant and recessive**[illegible]

[illegible]**transcription**[illegible]RNA[illegible]DNA[illegible]ATG—CAC—GGG[illegible]RNA“[illegible]”[illegible]AUG—CAC—GGG[illegible]

□□□**transformation**□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□□□

□□□□□□□**translation (of genes)**□□□□□□□□□□□RNA□□□□□□□□
□□□□□□□□□□□□□RNA□□□□□□□□□□AUG□□□□□□□□□□□□□□□□□□□□
□RNA□□□□□□□□□□□□□

[illegible]

[illegible] 2016[illegible]5[illegible] 21[illegible]

[illegible]

[illegible]

[illegible]DNA[illegible]

□□□□□□□CIP□□□

□□□/ (□) □□□·□□□□; □□□□. --□□: □□□□□, 2018.1
□□□□: The Gene:An Intimate History
ISBN 978-7-5086-8242-6
Ⅰ. ①□… Ⅱ. ①□… ②□… Ⅲ. ①□□□□□□□ Ⅳ. ①Q343.1-49
□□□□□□□CIP□□□□(2017)□248252□

□□□
□□□□□□□□□·□□□
□□□□□□
□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□4□□□□□2□ □□100029□
□□□□□□□□□□

□□□□□□□□http://www.citicpub.com/
□□□□□http://weibo.com/citicpub
□□□□□□□□□□□
□□□□□App□□□□https://book.yunpub.cn/□□□□□□□□□□□□
□□□□□□□□